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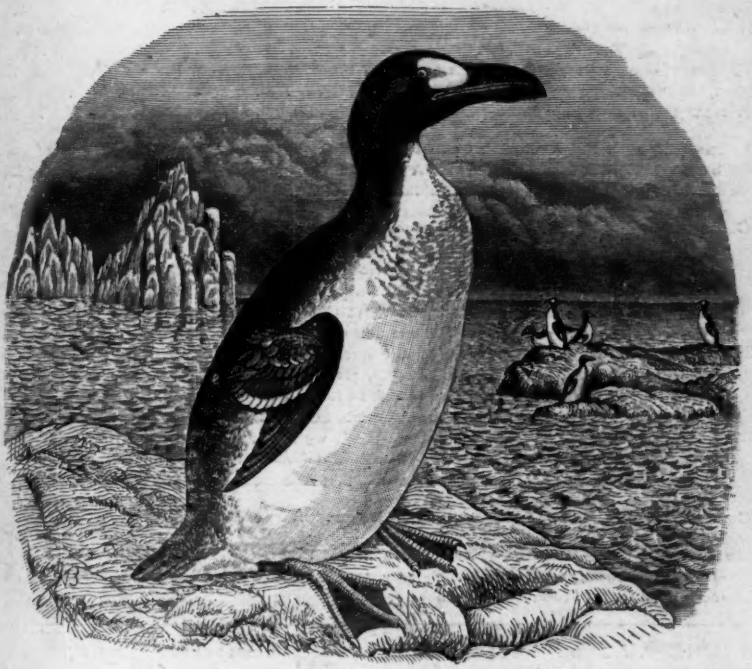

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THE AUK:

A QUARTERLY JOURNAL OF ORNITHOLOGY.

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NOTES ON THE HABITS, NESTS, AND EGGS OF THE GENUS *SPHYRAPICUS* BAIRD.

BY CAPT. CHARLES E. BENDIRE.

1. **Sphyrapicus varius.** YELLOW-BELLIED SAPSUCKER.

THE general habits of the eastern representative of this genus, *Sphyrapicus varius*, the Yellow-bellied Sapsucker, have been so well written up by Mr. William Brewster in the 'Bulletin' of the Nuttall Ornithological Club (Vol. I, No. 3, Sept., 1876. pp. 63 to 70), and later by Dr. C. Hart Merriam in the same 'Bulletin' (Vol. IV, No. 1, Jan. 1879, pp. 1 to 6), that there remains nothing new for me to state.

As some of the readers of 'The Auk' may not have access to the above-mentioned articles, I will simply mention that, according to Mr. Brewster, the favorite nesting-sites of *S. varius* are large, dead birches, and that the average height of the excavation from the ground is at least 40 feet, in some instances considerably more, and that a decided preference is manifested by this species for the vicinity of water. He gives the eggs as numbering from five to seven in a set, and varying considerably in shape, some being oblong, others decidedly elliptical. They average .85 in length by .60 inches in breadth, are pure white in color, and, he states, there is much less of that fine polish than in eggs of the other species of Woodpeckers he had examined.

The average measurement of the few eggs of *S. varius* in the Collection of the National Museum, six in number only, is .84 × .65 inches.

2. **Sphyrapicus varius nuchalis.** RED-NAPED SAPSUCKER.

This race of *S. varius* I have met sparingly in various portions of the Blue Mountains of Oregon, Washington Territory, and Idaho, and as far west as the eastern slope of the Cascade Range in Southern Oregon, in the Klamath Lake region, where, however, it was rare and replaced by *Sphyrapicus ruber*, the two species overlapping each other, but not intergrading and remaining perfectly distinct. I first met with the nest and eggs of this bird in a small aspen grove at the edge of a beautiful little park-like prairie, near the summit of the Blue Mountains, in Grant County, Oregon, on June 12, 1877.* I was escorting an Army Paymaster from Cañon City to Camp Harney, Oregon, where I was then stationed. After a laborious climb to the top of the steep mountain at the foot of which the little mining town of Cañon City nestled, I stopped for some twenty minutes to rest the animals, and to eat our lunch. The spot was a lovely one; the little grove at the edge of the heavy pine forest contained perhaps half a dozen aspens, that measured a foot through or more, and a number of smaller ones. I had made myself comfortable under one of the largest ones which stood on the outer edge of the grove, watching the horses enjoying the luxuriant grass, and was busily engaged in eating my lunch, sharing it with several Oregon Jays, *Perisoreus obscurus*, which were quite tame, and absorbed my entire attention for some time. A Red-naped Sapsucker was, in the meantime, flying about my tree, alighting on others in the vicinity, and keeping up a constant chatter. I thought at first he was jealous of the Jays, and paid no attention to him, till he flew on to the tree I was sitting under, which brought out his mate. Their burrow was directly over my head, about twenty feet from the ground, and I might have noticed it sooner, by the fresh chips dropped by the birds in excavating their burrow, and which were lying all around me, had I not been entirely absorbed in watching the Jays, or 'Meat Birds,' as they are called there by the hunters and trappers. It did not take long for one of my men to climb up to the burrow and chop a sufficiently large hole in the tree to insert the hand. The entrance to the burrow was exceed-

* But I had previously found a nest with young in June, 1875, in the same locality, as well as several in 1876.

ingly small, not over 1¼ inches in diameter, about 8 inches deep, and about 4 inches wide at the bottom. It contained three eggs, nearly fresh, lying partly imbedded in a layer of fine chips. About a year afterwards, when passing the same spot, June 2, 1878, I took another set of three fresh eggs of this species out of a burrow in another, somewhat smaller aspen tree, in the same grove. Although aspens of suitable size were to be found in several places in the immediate vicinity of Camp Harney, Oregon, which is located at the foot and on the southern slope of the Blue Mountains, at an altitude of about 4800 feet, I failed to find any of these birds nesting there, although they were met with by me at various times in the vicinity, and sometimes even quite a distance away from the mountains. They are only summer residents in that region, but an occasional straggler does remain in sheltered locations throughout the winter. I am inclined to think that this bird is much more common in the Rocky Mountain region.

An esteemed friend of mine, Mr. Denis Gale, an enthusiastic naturalist in the fullest sense of the term, and a close observer, residing in the mountains of Colorado, has at my request furnished me with the following observations regarding this species. He writes as follows:—

"My observations have been, that this species invariably selects for its nesting-site a living aspen tree. I have never met with it in any other. This tree favors the mountain gulches, and low sheltered hillsides at an altitude of from 7000 to 10,000 feet. Above this point they do not attain sufficient size, and are mostly dwarfed and scrubby. Here in Colorado *Sphyrapicus varius nuchalis* is seldom found above 9000 feet, or much below 8000 feet. The aspen tree is short lived, and ere much of a growth is attained a cross-section in the majority of instances will show a discolored centre of incipient decay, involving half or two-thirds of its entire diameter, with a sound white sap zone on the outer circumference, next the bark. This sound healthy zone nourishes the tree, until the decayed core discovers itself in some withered limbs, and frequently the top of the tree manifests the canker.

"Such trees the Red-naped Sapsucker selects for its nesting-site, and with great perseverance chisels through this tough, sound zone, from an inch to an inch and a half through — com-

mencing with a very small hole and gradually extending its circumference with each stage of the deepening process, working from the lowest centre out, till the exact circumference of the intended aperture of entrance is attained. In thus radiating in circles from the central point, the minute chips are chiselled out with considerable ease. This mode of working is observed until the tough zone is worked through; what remains then is comparatively easy work; the soft, soggy, lifeless inside is worked into and downwards, with greater facility, and a roomy, gourd-shaped excavation quickly follows, the female doing the excavating from beginning to end, and, according to exigencies, completes it in from six to ten days.

"Some idea of the vitality and toughness of this zone of sap in a live aspen tree may be realized, when in a tree used consecutively three or four years, which if undisturbed is the general custom of *S. varius nuchalis*, the entire aperture will be almost closed by the recuperative agent in the sap of the tree to heal and close up the wound. No other Woodpecker will face such a formidable task. *Picus villosus harrisii* comes next as a borer; then follows *Sphyrapicus thyroideus*. Both of these species nest sometimes also in apparently live aspens, but upon close inspection such trees will be found to be badly decayed.

"*S. varius nuchalis* usually insists upon a new excavation each year. The height of nesting-sites from the ground varies from five to thirty feet; the full set of eggs is four or five in number, sometimes a smaller number of eggs mark a full set, presumably the nest of one of last year's young birds. Fresh eggs may be looked for in Colorado from June 1 to 15, and should the first set be taken, a second one may generally be found in from ten to fifteen days later; and as a rule the second nesting-site will not be greatly distant from the first one. Several nests of this species may be found within a short distance of each other in the same aspen grove."

Two sets of four eggs each of this species, taken by Mr. Gale and kindly presented to the National Museum, Washington, D. C., measure as follows: 1st set, taken June, 1884, four eggs, .91 × .67, .90 × .68, .89 × .68, .88 × .64 inches; 2nd set, taken June 1, 1887, .90 × .69, .90 × .69, .90 × .68, and .89 × .65. A set of three eggs taken by the writer in the Blue Mountains, Grant County, Oregon, June 12, 1877, measures, .90 × .65,

.90 × .64, .88 × .66 inches. A second set, taken at the same place a year later, on June 2, 1878, measures .89 × .68, .84 × .66, .82 × .66 inches. A third set, taken by me near Fort Klamath, Oregon, on June 3, 1883, contained five eggs partly incubated; two of these were broken in chopping them out; the remaining three measure as follows; .84 × .68, .84 × .66, .82 × .66 inches. A single egg taken also near Fort Klamath, Oregon, June 5, 1883, measures, .89 × .64 The average measurement is .88 × .66 inches. These eggs, like those of all Woodpeckers, are pure white after blowing; they are generally ovate in shape, and but moderately glossy or lustrous.

My own limited observations during the breeding season bear out Mr. Gale's statements completely, viz., that this species breeds exclusively in live aspen trees. Dr. J. C. Merrill, U. S. A., in Bull. Nutt. Club, October, 1881, states, however, that he found a nest of these birds in a dead cottonwood tree in Montana. In Southwestern Oregon, in the mountain parks of the Klamath Lake region, these birds breed sparingly at as low an altitude as 5000 feet, and it is more than probable that at a higher one, near the summit of the Cascade Range, they may be quite common.

In the Blue Mountain region, in eastern Oregon, I only found them breeding in the single locality already mentioned, at an altitude from 6000 to 7000 feet. During the winter months I have occasionally observed a Red-naped Sapsucker in the Harney Valley in Oregon, busily engaged in hunting for food amongst the willow thickets found growing along the banks of the small streams, in that sage-brush-covered region, often long distances away from timber of any size. In the young birds of the year of *Sphyrapicus varius nuchalis*, the red or crimson markings found about the head and throat of adult birds are usually wanting or else are replaced by a pale claret-colored tinge on the corresponding parts. The black on the back and wings is also duller and not so deep, and the general pattern less distinct.

3. Sphyrapicus ruber. RED-BREASTED SAPSUCKER.

This handsome representative of the genus *Sphyrapicus* seems to be strictly confined to the Pacific Coast region, occurring only as far eastward as the eastern slopes of the Sierra Nevada Mountains in Central and Northern California, and the Cascade

Range in Oregon and Washington Territory, passing thence northward through British Columbia well into Alaska. In the winter it is found in the mountains of Southern California, but I do not believe that it breeds there. In my various travels throughout the interior of Oregon, Nevada, Washington and Idaho, covering over fifteen years, I never met with this bird till the summer of 1882, when I was ordered to take station at Fort Klamath, located near the northern end of Klamath Lake, in the southwestern part of Oregon. Here I found the Red-breasted Sapsucker an abundant summer resident, and I have no doubt a few of these birds winter in the more sheltered portions of the deep cañons of the lower Klamath River region. They are among the earliest birds to arrive in the spring. The first bird of this species shot by me in the spring of 1883 was obtained on March 13, and I have seen a few as late as November. On one of my collecting trips, the morning of April 4, 1883, while riding through a patch of pine timber near Wood River, the principal stream running through the centre of Klamath Valley, I noticed a flock of these birds, at least twenty in number. They were very noisy, apparently glad to get back to their summer homes, and seemed to have an excellent time generally, flying from tree to tree and calling to each other.

As I wanted a couple of specimens, I was compelled to disturb their jollification; those procured were both males, and presumably the entire flock belonged to this sex. By April 20 they had become very common, and some pairs at least were mated and had already selected their future domiciles—in every case a good-sized, live aspen tree. The males might at that time be heard in almost all directions drumming on some dry limb, generally the dead top of one of these trees. They scarcely seemed to do anything else. At least five pairs nested within half a mile of my house, and I had excellent opportunities to observe them. Some birds, apparently more industrious than others, would not be satisfied with one burrow, and excavated several, sometimes all in the same tree; others contented themselves with a single one. It is possible that the extra ones, after being begun, were abandoned, either being found to be too damp inside, or for some other cause unknown to me, or they may have been made by the male for his own use to pass the nights in, and be close to his mate in case of danger, or again, just to

keep his bill in practice, chiselling. I am myself inclined to think that the female does nearly, if not quite all the work on the burrow in which she deposits her eggs.

These birds are not at all shy during the breeding season, allowing you to approach them closely, but they have an extraordinarily keen sense of hearing. I frequently tried to sneak up to a tree close to my house which I knew had been selected by a pair of these birds, to watch them at work, but I was invariably detected by the bird, no matter how carefully I tried to creep up, before I was able to get within thirty yards, even when she was at work on the inside of the burrow and could not possibly see me. The bird would cease working at once, her head would pop out of the hole for an instant, and the surroundings be surveyed carefully. If I kept out of sight and perfectly still, she would probably begin working again a few minutes afterwards, but if I moved ever so little, without even making the least noise, in my own estimation, she would notice it and stop working again at once. If the tree were approached too close she would fly off, uttering at the same time a note resembling the word *jay* or *chäe*, several times repeated, which would invariably bring the male around also, who had in the mean time kept himself busy in some other tree, either drumming or hunting for food. While the female was at work on the inside of the burrow, the male would from time to time fly to the entrance and look in, probably asking his mate how her work was coming on. how soon they might begin housekeeping, etc.; and at other times he would hang for five or ten minutes even, just below the entrance to the burrow, in a dreamy sort of study, perfectly motionless and seemingly dazed, evidently thinking of the family responsibilities that were soon to come.

I am inclined to think that this species does not indulge in the habit of girdling trees for the sap, and the soft inner bark (cambium) to the same extent that *Sphyrapicus varius* does, at any rate not during the breeding season. These birds were, as I said before, extremely abundant in the vincinity of Fort Klamath, and this being the case, evidence of their work in this direction should have been rather common. I don't remember having seen more than two instances, showing extensive and systematic signs of girdling; one, a medium-sized cottonwood limb, showed the punctures all over for a distance of three feet, the

other, a species of mountain ash, on which none of the shoots were over three inches through, had been riddled all over by the birds. These mountain ash shrubs, none of which grow to any size, were rare, however, in that vicinity.

In its range, I think this species breeds at a lower altitude than *S. varius nuchalis*. Fort Klamath, however, although but 4200 feet above sea level, has a very cool summer climate, frosts occurring almost in every month of the year. The surrounding country is very beautiful at that time. Heavy, open forests of stately pines and firs, amongst these the graceful and beautiful sugar pine, are found on the mountain sides and reaching well down into the green park-like valleys. Interspersed here and there are aspen groves of various extent, their silvery trunks and light green foliage blending artistically with the sombre green of the pines. These aspen groves are the summer home of the Red-breasted Sapsucker.

As far as my own observations go, healthy, smooth-barked aspens are always selected as suitable nesting-sites by these birds. The trees used vary from 12 to 18 inches in diameter near the ground, and taper very gradually. The burrow is usually excavated below the first limb of the tree, say from 15 to 25 feet from the ground. The entrance seems to be ridiculously small for the size of the bird, perfectly circular, from 1¼ to 1½ inches in diameter only, so small indeed that it seems as if it took considerable effort for the bird to squeeze himself in, and wriggle out of the hole.

The gourd-shaped burrow varies in depth from six to ten inches, and it is from three inches, near the top, to four or five inches wide at the bottom. The finer chips are allowed to remain in the burrow, forming the nest proper, on which the eggs are deposited. Frequently they are more than half covered by these chips. The interior of the entire excavation is most carefully smoothed off, which must consume considerable time, considering the tough, stringy and elastic nature of the wood, when filled with sap, making it even more difficult to work when partly decayed, which seems to be the case with nearly all aspens of any size. Probably eight or ten days are consumed in excavating a satisfactory nesting-site. All the larger and coarser chips are dropped out of the burrow and scattered about the base of the tree. From the quantity of these found under every tree,

occupied by these birds, during the nesting season of 1883, I am inclined to believe that they are only satisfied with an entirely new burrow every year, and not simply with an old one repaired to answer the purpose. These same chips are an extremely simple and sure guide to their nest.

In hunting for them I looked for the chips on the ground first, and after finding these it did not take long to find the hole from which they came. In this manner it was an easy matter to find their nest, and I took no less than fifteen sets of their eggs in a single season, and might have taken more had I been so inclined, especially by following up the birds for their second set, where they had been robbed previously. Ordinarily but one brood is raised in a season.

The number of eggs varies from five to six to a set. Full sets of fresh eggs may be looked for in that locality from May 20 to June 5, and I have taken nearly fresh eggs as late as June 13; I took my first set on May 23, 1883. It contained six fresh eggs, and the burrow was about seven inches deep, the entrance about eight inches below and directly under the first limb of the tree, as usual a live aspen, about 18 feet from the ground. While the nest was being rifled of its contents, both parents flew about the upper limbs of the tree, uttering a number of different sounding plaintive cries, like *peeya*, *pinck*, and *peurr*, some of these resembling somewhat the purring of a cat when pleased and rubbing against your leg. I used to note the different sounds in a small note book at the very time, but scarcely ever put them down alike; each time they appeared a trifle different to the ear, and it is a hard matter to express them exactly on paper.

The eggs, when fresh and before blowing, like those of all Woodpeckers, show the yolk through the translucent shell, giving them a beautiful pinkish appearance, as well as a series of straight lines or streaks of a more pronounced white than the rest of the shell, running towards and converging at the smaller axis of the egg. After blowing, the pink tint will be found to have disappeared, and the egg changed to a pure delicate white, the shell showing a moderate amount of lustre. There is considerable variation in their shape, running through all the different ovates to an elongated ovate. The average measurements of sixty specimens now before me are .94 × .68 inches; the largest egg in the lot measuring 1.00 × .70, the smallest .86 × .68 inches.

Both sexes assist in incubation, which lasts from twelve to fourteen days, I think. Their food consists principally of grubs, larvæ of insects, various species of lepidoptera which they catch on the wing, like Flycatchers, and berries. Of the latter quite a number of different edible species are found about Fort Klamath, and they seem to be especially fond of wild strawberries, which grow there in abundance. The young after leaving the nest stick to the tree in which they were hatched for the first day or two, without venturing to fly.

The beautiful carmine or crimson on the head and breast in the adults is replaced by claret-brown in the young, varying in amount and intensity in different individuals; in some it is very distinct and prevalent. The yellow so plainly noticeable on the belly of adult birds is also wanting in the young. The colors throughout are much duller and the general pattern less distinct. By the latter part of September, the majority of these birds leave for their winter haunts, only a few stragglers remaining. These are possibly birds that breed further northward and winter in the warm valleys of Northern California, and are then comparatively near the end of their migration, remaining in the Klamath Valley region where there is always an abundance of food for the Woodpecker family, judging from the number of different species of these birds found there throughout the year, till the heavy winter snows drive out the less hardy, amongst which the Red-breasted Sapsucker must be included.

While stationed at Fort Klamath, Oregon, I took especial pains to collect a good series of both adult and young birds of this species, as well as a number of sets of their eggs, and devoted considerable time, at no little inconvenience to myself, to observe their general habits closely. Although my personal observations differ materially from those of other naturalists (see 'History of North American Birds,' by Baird, Brewer, and Ridgway, Vol. II, pp. 544 and 545), I am confident that they will be found substantially correct by future observers. The egg described in the above-mentioned work, purporting to belong to this species, certainly does not, and I also doubt very much that these birds ever breed in coniferous trees of any kind.

4. **Sphyrapicus thyroideus.** WILLIAMSON'S SAPSUCKER.

This interesting species is so unique in the entire difference of coloration of the sexes, that for a long time they were considered and described as separate species. It remained for Mr. H. W. Henshaw, then attached as Naturalist to Lieut. George M. Wheeler's expedition, engaged upon the geographical exploration of Colorado and New Mexico, in 1873, to establish their identity, he finding the supposed two species paired and breeding near Fort Garland, Col., in June of that year. Like *Sphyrapicus varius nuchalis*, it has an equally wide and extended range, reaching from the eastern slopes of the Rocky Mountains to the western spurs of the Sierra Nevada and Cascade Ranges in California and Oregon. In its habits, however, it differs considerably from the three other species of the genus *Sphyrapicus*, all of which seem to prefer regions abounding in deciduous trees, and using these as far as at present known, exclusively for nesting purposes, while Williamson's Sapsucker gives the preference to coniferous forests, selecting pines to burrow in, at least as frequently as aspens, and according to my own observations oftener than the latter.

Although it undoubtedly occurs in the region intervening between the Rockies on the east, and the Cascades on the west, I cannot positively recall a single instance where I have seen this bird in the entire mountain system, beginning at the Bitterroot Range in Montana in the east, following the continuation of this through the Blue Mountains of Washington Territory and Oregon, as well as most of the Salmon River mountain country in Idaho Territory, till I first met with it on the eastern slopes of the Cascade Range near Fort Klamath, Oregon, in the autumn of 1882. It was here Dr. Newberry obtained the type of the so-called *Sphyrapicus williamsoni*. Here I saw it for the first time on September 23, and as late as November 8, of the same year, taking specimens on both dates. Strange to say, all the birds I saw and secured for a period covering about five weeks, at that time, were females, and I only succeeded, on October 28, in seeing and obtaining my first male of this species. It was obtained under rather peculiar circumstances. I had only to walk a couple of hundred yards from my house to find myself in a fine open pine forest. Gun in hand I, as usual, took a short stroll that

morning, following close along the banks of Fort Creek, directly east of the post, towards its source, and I had not proceeded more than half a mile from my house when I saw two males chasing each other about a dead pine stump, and uttering at the same time shrill cries; this is what attracted my attention to them. I tried to get within ordinary shooting distance of them, but they took alarm and flew in opposite directions before I was near enough. Nevertheless I took a snap shot at the one nearest to me, but it continued its flight apparently uninjured, crossing the creek, which was too deep and cold for me to ford, about sixty yards in advance of me, and much to my disgust disappeared in the heavier pine timber on the opposite side, without stopping while it was in sight. As it was useless as well as impracticable to follow this one, I kept on in the direction the other had taken, but failed to see it again. Fully an hour afterwards, on my way returning to the post, and when within a few yards of the place where I first noticed the two birds, tired out and disgusted, I sat down on an old log and was taking a rest, absorbed in reflections on my bad luck, when from quite a distance, I noticed a black-looking bird flying towards me, coming from the opposite side of the creek, and from the same direction the one I shot at had taken earlier in the morning. Its flight was so peculiar and strange, constantly sinking, that I refrained from shooting when it first came within range. No wonder; it was its last expiring effort, and it actually dropped within a yard of where I was sitting. It was unquestionably the very bird I had shot at more than an hour before; no one else was out hunting at the time, as no other shots were heard. A single No. 12 pellet had penetrated the lungs, and the bird in its dying struggle had evidently tried to reach the same stump again on which I noticed it at first.

My earliest record for 1883, on which I obtained a specimen, a male, was March 20. It seems to me to be a more solitary bird than *S. ruber*. I never saw more than two together or in close proximity of each other. It is also more shy, and does not allow itself to be approached so readily as either of the preceding species. Its breeding range extends, near Fort Klamath, from an altitude of about 5000 feet to the higher peaks of the Cascade Range, which attain in that vicinity a height of about 9000 feet. On the mountain slopes about Crater Lake, it seems to be most abundant, but not as much so as *S. ruber* is in the lower valley,

where almost every aspen grove harbors a pair of these birds. Crater Lake itself is such a strangely interesting and unique freak of nature, the peer in sublime grandeur of the Yosemite Valley in California, and the Yellowstone Park, with its grand cañons and geysers, in Wyoming, and so little known withal, that I am sure the readers of 'The Auk' will forgive me the transgression of interlarding a short description of it in this paper. The lake is about seven and a half miles long and six wide, and unlike anything found in this or any other country. It is situated on the summit of the Cascade Range, about twenty-five miles north of Fort Klamath, at an altitude of about 7500 feet; the highest peak in the vicinity reaches up to 9000 feet. The rocky walls surrounding it on all sides are nowhere less than 1000 feet, and in places more than 2000 feet high, in many points almost perpendicular, so that a stone can be thrown without striking anything on its way till it reaches the water, fully 2000 feet below. It is said to be some 1800 feet deep, and in places is probably more. One cannot realize the magnitude of this hole in the ground without seeing it. A mountain the size of Mt. Washington, the highest peak of the White Mountains in New Hampshire, might be dumped in, and not fill it up then. The water is beautifully clear, and deep azure blue in color; the the only living thing seen on it on a visit to the lake on July 27, 1882, was a solitary female Wandering Tatler (*Heteractitis incanus*), apparently very correctly named. An island, covered with good-sized trees, rises out of the water to a height of nearly a thousand feet, on the west side of the lake. It is composed mostly of volcanic scoriæ and pumice, and evidently was the principal cone of the now extinct crater, traces of whose activity in former times, in the shape of heavy pumice deposits, can be found for fifty miles inland to the east, on the road from the De Chutes River to Fort Klamath. There is only one place from which the shore of the lake can be reached with comparative safety, and even from there it is by no means an easy matter. But enough of the lake.

Mr. Gale, who is quite familiar with this species, writes me that in Colorado they nest sometimes at an altitude of 10,000 feet, and that they are generally distributed between that limit and 8000 feet. The nest-sites, he says, are as often met with in moderately thick woods as in the more open clearings and isolated

pine trees and shrubs, the only condition guiding their choice of a home being a shelter from the strong west winds. My own observations agree pretty well with his. He says: "A marked peculiarity I have noted with *S. thyroideus* is that the male takes a lookout station upon some suitable tree, where at the approach of any possible danger he gives the alarm by striking a short dry limb with his bill, by which a peculiar vibrating sound is given out, which the female, not very distant, fully understands, and is at once on the alert. If either excavating, guarding or covering her eggs, she will immediately look out of her burrow, and should the intruder's path lie in the direction of her nest, she will silently slip away and alight in a tree some distance off, but in view of both her nest and the intruder. The first or second blow of your hatchet upon the tree trunk in which the nest is excavated will mark her movement again by a short flight, so managed as not to increase the distance, in fact oftener coming nearer. When satisfied that her treasures have been discovered, she utters a peculiar, low grating sound, not unlike the purr of a cat. The male then comes to the fore and braves the danger, is very courageous, and should the eggs be far advanced by incubation, he will enter the nest when you are almost within reach of it. When the latter is rifled, he is always the first to go in and discover the fact, repeating the entrance and exit business several times, in a surprised sort of manner. The large gaping opening, made by the robber's hatchet, he seems to ignore altogether. To him it seems impossible that a few minutes only suffices to cut through the wall of wood that took his mate as many days of hard labor to accomplish. Presently he is joined by the female, a joint inspection is made, a verdict of grand larceny quickly reached, and the conclusion arrived at, 'well, we shall have to try again, with the hope of better luck next time.'"

Nidification is similar to that of the other species of the genus, with the exception of the difference in the matter of trees preferred already mentioned. The height of nesting-sites varies considerably, say from five to sixty feet, and perhaps more still in exceptional cases. Fresh eggs may be looked for, according to altitude, from May 20 to June 15; Mr. Gale took a fine set of six, which I judge to have been perfectly fresh, from the exquisite manner in which they are prepared, on May 26, 1887.

I obtained my first set of eggs of this species on June 3, 1883,

about nine miles north of Fort Klamath in the open pine forest on the road to Crater Lake. It consisted of five eggs, slightly incubated. The burrow was excavated in a partly decayed pine, whose entire top for some twenty feet was dead. Height of burrow from the ground about fifty feet. The man climbing the tree stated it to be about eight inches deep, and about five inches wide at the bottom and freshly made. A second set, of six fresh eggs, was taken June 12, of the same year, about twelve miles north of the post, at a still higher altitude than the first one. It came also out of a pine about forty feet from the ground. A third nest, found a week later near the same place, contained five young just hatched. This nest was in a dead aspen about twenty feet from the ground. The full number of eggs laid appears to be five or six. These are pure white, a trifle less lustrous than those of *S. ruber;* they are a little more elongated and pointed in shape, some approaching a distinct ovate pyriform or pear shape, a characteristic not apparently found in the eggs of the other species of this genus. The average measurements of seventeen specimens now before me are .97 × .67 inches. The largest in the lot measures 1.02 × .68, the smallest .94 × .67 inches. Only one brood is raised, and, like the two other species, it is only a summer resident in the vicinity of Fort Klamath. Its food seems to consist almost exclusively of insects and their larvæ, various species of lepidoptera and an occasional grasshopper. Berries I think are seldom used by them.

I have found fully fledged young in July; a young female shot July 21 must have left the nest certainly by the beginning of the month. When the young are large enough to fly they are not at all rare at the lower altitude of Fort Klamath. They show the same difference in coloration in the sexes, in their first plumage, with these exceptions: the young males lack the red on the throat, which is replaced by dirty white, the sulphur yellow on the lower parts is mostly wanting, a slight trace of it being noticeable on some specimens, and the black on the back is much duller. The young females differ likewise by the absence of yellow on the belly, the black patch on the breast is wanting, the markings and barrings on the upper parts are less distinct, and the colors generally duller.

In its undulating flight from tree to tree, this species utters a shrill note like *huit, huit.*

From the foregoing description and measurements of the eggs of the different species of the genus *Sphyrapicus*, it will be seen that the eggs of *S. varius* are the smallest; those of *S. varius nuchalis* come next in size; then *S. ruber*, and those of *S. thyroideus* are the largest.

The following additional species of the Family Picidæ, occur in the vicinity of Fort Klamath, Oregon.

Dryobates villosus harrisii.	Ceophlœus pileatus.
Dryobates pubescens gairdnerii.	Melanerpes formicivorus bairdi.
Xenopicus albolarvatus.	Melanerpes torquatus.
Picoides arcticus.	Colaptes cafer.

All of these species breed there more or less commonly, excepting *Melanerpes formicivorus bairdi*, which occurs only as a straggler on the eastern slope of the Cascade Range, owing to the absence of oaks, but is quite abundant on the western side of these mountains, wherever oaks are found, especially so near Ashland and Jacksonville, Oregon, in the Rogue River valley. I shall have something to say about the nests and eggs of some of these species in a future paper, having found them all breeding there, and taken the eggs of all excepting *Ceophlœus pileatus*.

NEW AND RARE BIRDS FOUND BREEDING ON THE SAN PEDRO MARTIR ISLE.

BY N. S. GOSS.

THE island, a rock about one and a half miles long, nearly as broad, and 1045 feet in height, is situated in the Gulf of California, a little north of latitude 28°, and not far from midway between shores. I was enabled to visit the same through the kindness of Mr. E. J. Reed, of Guaymas, Mexico, agent for the San Francisco Phosphate and Sulphur Company. I landed from their little steamer that takes out supplies, March 15, 1888, and remained until the 28th. The Company has a large force of Yaquie Indians collecting the guano that has formed a crust on the rocks of from one to four inches in thickness. The island

has been worked for the past three years; notwithstanding this the following described birds continue to breed there, and as the guano of value will be collected within the next six or eight months, the birds will then have undisturbed possession, except upon the rare appearance of roving bird collectors; but as the isle is uninviting and without fuel or water such visits will be of short duration. The following is a low estimate of the birds breeding there, viz.: Blue-footed Booby, 1000; Brewster's Booby, 700; Red-billed Tropic Bird, 80; Mexican Raven (*Corvus corax sinuatus*), 100; a few Western Gulls (*Larus occidentalis*), and perhaps a few other birds; it was too early in the season to determine this, but it does not appear to be a general breeding place for birds, though a natural one for the Boobies, and when undisturbed thousands upon thousands will breed there. The tenacity with which they cling to their breeding grounds is surprising. One hundred and thirty-five Indians were on the payroll and many had their families with them, and in working and climbing over the isle, they were continually disturbing and often robbing the birds. In this respect, however, the Indians are not as destructive as the white race, and as the Company feeds them well, seem to care but little for the eggs, but the thievish Ravens are ever on the watch and ready to drop upon the eggs or the little ones the moment the parent birds are driven away.

NOTE.—In the identification of the Boobies I am greatly indebted to Mr. Robert Ridgway, who not only placed before me the specimens of the family in the National Museum, but kindly aided in the examination and comparison.

Sula gossi *Ridgw.* (MS.), sp. nov. BLUE-FOOTED BOOBY.

SP. CHAR.—Head, neck, and entire lower parts white, the first two streaked with sooty grayish, back and scapulars dusky brownish, tipped with whitish, legs and feet bright blue in life.

Adult male.—Iris yellow; bill dull olive blue; bare space around bill, eyes, lores, and gular sac slate-blue; legs, feet, and webs bright clear ultramarine blue with a slight greenish tint on webs; claws pale glaucous blue; feathers of head and neck grayish white, widely edged in middle portion with dark sooty grayish, their lanceolate tips pure white, producing a wavy streaked appearance; these markings become obsolete on the anterior part of the forehead, and on the throat for some distance behind the gular sac, and are nearly uniform grayish white; lower neck and en-

tire lower parts, including flanks, axillaries, and most of the under wing-coverts, pure white, broken only on the sides of the lower neck by rather indistinct broad streaks of pale sooty grayish, changing posteriorly next to back into more distinct spots of a deeper hue; feathers of back and scapulars deep sooty grayish or grayish brown, rather broadly but not abruptly tipped with dull white, these terminal spots larger and more distinct on posterior scapulars; wing-coverts entirely plain grayish brown or light sepia, deepening gradually into sooty slate on primaries; lower back and lower rump pale grayish sepia, fading gradually into white on upper tail-coverts; the upper parts of rump chiefly pure white; middle tail-feathers white, faintly shaded on outer portion of outer web for about the terminal third with pale brownish gray, their shafts entirely clear yellowish white, the outer pair wholly sooty grayish (darker terminally and on most of outer web), the others gradually paler towards the middle pair.

Adult female.—Essentially like the male, but differing in the following particulars: Iris paler yellow, plumage somewhat darker, except the hind neck, which is less distinctly streaked, and size larger.

The following measurements are from specimens saved, the first two are in the Goss Ornithological Collection, the last two in the National Museum:

Length.	*Stretch of Wing.*	*Wing.*	*Tail.*	*Tarsus.*	*Bill.*	*Weight.*
34.50	66.00	16.75	9.70	2.20	4.70	4 1-4 lbs.
33.00	63.00	15.75	9.00	2.10	4.10	3 "
33.50	65.00	16.50	8.70	2.20	4.50	*3 15-16 "
32.00	62.00	15.50	9.50	2.10	4.20	2 10-16 "

The birds make no nests and lay but one egg; this they drop upon the smooth rock, often in exposed situations, preferring the places where the guano had been removed and, in many cases, close beside the winding paths that were hourly trodden. I found no young birds, and from the condition of the many eggs examined, think they do not commence laying before the 1st of March. Average measurement of 21 eggs, 2.42 × 1.60; ground color greenish blue, coated with a dull white chalky substance, but generally more or less stained with the guano that gives them a dirty buff white look; in form elliptical ovate.

Sula brewsteri,* sp. nov. BREWSTER'S BOOBY.

SP. CHAR.—Similar to *S. sula*, but mantle ending uniform in color with head and neck, the last two paler, especially in the male, in which the neck is pale drab gray fading into white on anterior portions of head; un-

*To my esteemed friend, William Brewster, Cambridge, Mass.

feathered parts also differently colored. Iris dark brown with a narrow ring of grayish white around the outer edge; claws glaucous blue.

Adult female. — Bill pale bluish horn fading after death, and towards the base, to a dull dirty buff; lores slate-blue, bare space around eyes, and gular sac, pale yellowish green; legs, feet, and webs lighter in color and with more of a yellow look; head, neck, breast, and upper parts of body rich drab brown or sepia, deepening on primaries and rectrices into seal brown, the shafts of the feathers black; underparts, posterior to breast, pure white.

Adult male.—Bill olive blue, lores and bare space around eyes indigo blue, gular sac dull slate-blue with a greenish tint, feet and webs light pea-green; the body similar to the female but a little paler, and the breast fading forward into sooty drab; anterior parts of head and throat white, the rest of head and neck drab gray, deepening back, and on the under sides shading into the color of the breast.

Length.	*Stretch of Wing.*	*Wing.*	*Tail.*	*Tarsus.*	*Bill.*	*Weight.*
29.50	56.50	14.35	8.00	2.00	3.75	2 12-16 lb.
31.00	59.08	15.60	8.00	2.00	4.00	3 1-16 "
29.60	55.50	14.48	8.00	2.00	3.90	2 8-16 "
31.50	59.50	15.60	8.25	2.00	4.00	3 "

The above measurements are from specimens saved; the first two are in the Goss Ornithological Collection, the last two in the National Museum. I, however, measured others; the females in all cases were the largest.

The birds were not wild, but their nesting places as a whole were not in as exposed situations as those of the Blue-footed; they seemed to prefer the shelves and niches on the sides of the rocks. They lay two eggs, and in all cases collect a few sticks, seaweed, and often old wing or tail-feathers; these are generally placed in a circle to fit the body, with a view, I think, to keep the eggs that lie upon the rock from rolling out. There is but little material on or about the isle out of which a nest can be made.

The birds must commence laying as early as the 10th of February, for I found in many cases young birds from half to two-thirds grown—white, downy little fellows with deep bluish black skins—that, in places where they can, wander about regardless of the nests where they were hatched. Average measurement of 17 sets of their eggs, 2.44 × 1.60. In color and form, as well as in size, they are similar to the eggs of the Blue-footed, in fact so near alike that when placed together they cannot be separated with any feeling of certainty; therefore in collecting I was careful to mark each set before they left my hands.

Phaëton æthereus *Linn.* RED-BILLED TROPIC BIRD.

The birds breed in holes and crevices on the sides of the steep cliffs that often overhang the water; many were inaccessible. I was therefore able to reach and examine but few of their nesting places. These were without material of any kind for a nest; the egg (for they lay but one) was upon the bare rock. In nearly all, however, I found a young bird, about half grown; from this I think the birds begin to lay as early as the middle of February. With the aid of the Indians, who are expert climbers, I was only able to procure and save seven of their eggs. The ground color is dull grayish white, rather finely and evenly sprinkled with deep claret brown, generally thickest at large end, the specks running largely together, giving the eggs a clouded or marbled look. In form they are ovate. Measurements of the same, 2.31 × 1.71, 2.40 × 1.72, 2.40 × 1.78, 2.26 × 1.71, 2.49 × 1.81, 2.40 × 1.69, 2.38 × 1.68. When approached the birds within their homes do not attempt to leave, but vigorously defend the same, striking and biting with their strong, pointed, sharp-edged, jagged bills, lacerating the ungloved hand that dares intrude, uttering at the same time a loud, harsh, rapid *che-che-che-che-che-che-che*,—notes of defiance, and often heard in their rival flights. The birds are very beautiful, and cannot fail to attract attention, especially when in the air, by the peculiar rapid stroke of their wings and graceful waving motion of their long whip-like tails.

FEEDING HABITS OF SOME YOUNG RAPTORES.

BY H. JUSTIN RODDY.

ALL raptorial birds, whether juvenile or adult, eat large quantities of food when it can be obtained. But they are able to endure long fasts. Digestion is rapid, as is absorption. In from one-half to one and a half hours after eating the stomach is empty, as are also the greater part of the intestines.

Young rapacious birds eat more than the adult birds, since both sustenance and growth must be provided for. By careful

comparison I think they eat more than those of any other class of birds. The actual quantity may not be so great but when quality is considered in connection with quantity the amount is greater. Their food is largely animal, the nutrient quality of which is of the highest character.

The great amount of nutriment is essential for their active life and predatory habits, in which the highest muscular exertion is necessary for securing their prey. The amount of food, therefore, is only an essential condition of their active life.

Cathartes aura. — A young Turkey Buzzard gorges itself with food to such an extent that it can hardly move. One will eat at a single meal a whole water snake (*Tropidonotus sipedon*) three feet long, as a young one once in my possession frequently did. Before it had a single feather it ate a house snake, three and a half feet long, equal in weight to one-fifth that of the bird. And in one and a half hours it was entirely digested, as I determined by killing and dissecting it at the end of that time.

The young birds are fed for a considerable time by the parents by ejection of food from the crop or stomach, where it had either been softened or partially digested. The young insert the opened bill into the mouth of the parent, and drink the food from it much as a fowl drinks water. The food is, probably, always quite moist or juicy, thus furnishing drink to the young bird at the same time.

The young birds kept in captivity drank water freely from any vessel as a fowl drinks, but were fonder of drinking from some vessel, as a bottle, with a narrow opening partially inverted, that the liquid might flow out. This must be because it is similar to the opened bill of the parents.

They are very fond of thrusting the bill into the opening formed by the partially closed hand. I inferred from this fact the manner of feeding before I had an opportunity of observing it.

They are fond of being caressed, or at least handled, especially so while feeding. In a few days after being placed in captivity they become fond of being handled, and soon follow persons about like dogs. They express pleasure by a low hiss; displeasure by a more forcible hiss.

They have a strong antipathy to dogs and express their displeasure the moment one appears in sight. Possibly they mistake

them for foxes, in whose company, or rather in proximity to whose dens, I have sometimes found the young in their nests. If a dog approaches near enough, the young Buzzard will attack him with bill, claws, and wings, using them very effectively.

Accipiter cooperi. — A young Cooper's Hawk I took from the nest when quite small, probably not more than two weeks after being hatched. It was without any difficulty reared to full size; indeed, to more than full size, for the abundance of good food and favorable conditions made it attain a more than ordinary size. In length it grew two and a half inches, and in alar expanse four inches, greater than the largest specimen in my collection, or of which I had any record.

It was a great eater. When six weeks old it ate nine English Sparrows (*Passer domesticus*) and a common mouse (*Mus musculus*) in one day; and ate on an average eight Sparrows a day from that time until it was ten weeks old.

At first I removed the remiges and rectrices and some of the other stiffer feathers of the birds I fed it. But when it had attained considerable size I gave it its food without such preparation. The bird ate them, feathers and all. This, however, influenced the amount it ate, — as one would naturally suppose, since these larger feathers filled up the crop and stomach, sometimes giving the bird trouble to eject them when the digestible portions had been absorbed. After attaining full growth it gradually came to be more choice in the selection of food, and always removed all of the larger feathers.

The bird became very much attached to me, and even when it could fly and was allowed its liberty did not leave, but returned every few hours for its food, which I always liberally provided. How long it would have continued to do this I do not know, as the experiment ended with its death. It was shot by one who did not know it was my pet.

In eating the bird tore its food to pieces with the bill, nearly always beginning at the entrails. It almost always seemed to relish the intestines more than any other part of the bird or animal, sometimes eating only this part and leaving the rest. When the bird or animal was still warm and the blood therefore uncoagulated, it tore it open and apparently bathed the bill in the blood and the visceral juices. It apparently sucked up these fluids in order to allay thirst. But I invariably found it

refuse water,—in this respect acting quite differently from the *Cathartes aura*, which drank water freely.

It rejected cold and stiff birds which had lain a day or more, especially when abundance of food was furnished. Perhaps this is owing to the coagulated condition of the blood and the drying up of the visceral juices, of both of which it appeared to be so fond.

It made no sounds to express pleasure or displeasure during captivity, but when free and flying made the sounds common to the adults of this species.

Buteo pennsylvanicus.—Side by side with the *Accipiter cooperi* I reared a *Buteo pennsylvanicus* of about the same age. The characters of the two birds were essentially different. The fierce aspect of the Accipiter showed itself quite early, and indicated by its every action its rapacity and daring. The Buteo, on the other hand, was mild in appearance and never exhibited the fierceness nor voracity of the Accipiter.

But I succeeded better in petting the latter. It seemed to grow rapidly fond of my company. The Buteo, however, neither expressed pleasure, nor showed displeasure upon my coming near it, though it would make itself felt when one attempted to handle it. It never, however, used its claws with the same spirit as the Accipiter. I could handle the latter with impunity after it grew to know me. Strangers, it fought with spirit and resisted all their attempts at familiarity. The Buteo regarded all alike, seemingly neither as foes nor as friends.

Its voracity was not nearly so great as that of the Cooper's Hawk. It never at any time ate more than five Sparrows a day, and generally fewer than five. It, too, was more dainty in its feeding, nearly always pulling the feathers before eating. It was fond of insects, especially preferring grasshoppers, and ate frogs and fish with apparent relish. This the Accipiter did only when very hungry.

If any preference was shown by these Hawks in the selection of food, it was for food in the form of warm birds. And I experienced some difficulty in procuring enough Sparrows for them. I wished to supply in abundance the food they preferred, in order to make the conditions of their growth most favorable, and further to test their effect upon physical organization. The effects were apparent in larger size and more robust physique,

The Buteo never fed in my presence with the same freedom that the Accipiter did, nor were its actions so free. The latter's boldness and daring manifested themselves in every action.

Syrnium nebulosum.—Lastly I had a juvenile Barred Owl in my possession. In it, as in the others, abundance of food produced the same effects—larger size and more robust organization. The food most preferred was birds and small rodents; frogs and fish were eaten when quite fresh, though the latter were taken only when hungry. Insects, too, were eaten.

Digestion was rapid, requiring about one and a half hours for the digestion and absorption of a pair of Sparrows. Birds were always eaten without pulling a feather. If not too large they were swallowed whole, for the throats of young Owls are quite capacious. The indigestible parts are ejected when digestion is completed.

The Owl never, except once, fed knowingly in my presence (and it was difficult to observe its habits without its knowledge). Its sense of sight is so acute, and its range of vision so extended, that I was compelled to use many devices to deceive the bird and accomplish my purpose of observation without being observed. The food put into its cage was seldom eaten until pressed by hunger, and the bird never ate in a day more than one-third the quantity of food eaten by the Accipiter in the same time.

It could not easily be petted, nor did it acquire a fondness for being handled. Indeed it seemed to remain unaffected by kindness, and to love solitude.

NOTES RELATIVE TO THE SENSE OF SMELL IN THE TURKEY BUZZARD (*CATHARTES AURA*).*

BY C. L. HOPKINS.

DURING the recent months there has been a good deal of discussion in several of the scientific and sporting papers regarding the sense by which Buzzards find their food; and while taking

* Read before the Biological Society of Washington, D. C.

a good deal of interest in it myself, I also take it for granted that others have followed the discussion with interest; and so I am prompted to give here some notes of my own of observations made during a residence of something over two years in Southern Florida.

Early in my sojourn there I was told of instances in point by some of the old 'Crackers,' all bearing out the assumption that these birds do find their food by the sense of smell, at times unaided by sight, and I often found opportunity for observing the habits of these birds in this respect.

When I first located in Florida, in the year 1884, the festive and rather racy razor-back descendant of the Guinea hog and a very thin shadow of the past, was quite plenty in the immediate neighborhood of my home.

My place was situated upon the eastern bank of a small lake, about three-fourths of a mile in diameter; beyond this to the southward stretched an expanse of some three miles of meadow, dotted here and there by hummocky islands, which islands, together with a stretch of dense hummock, which began at the southwest side of the lake, and merged at the west into a magnificent piece of palmetto and live oak hummock, known as Cabbage Island, were favorite night roosts and day haunts of large numbers of the Turkey Buzzard.

I have often seen them rise from their roosts in the morning, after drying off their damp plumage, and when the morning breeze had freshened up to a strong rate,—and here let me note that, as far as my observation goes, upon damp, foggy or dewy mornings, these birds never left their roosts till after things were pretty thoroughly dried off, and a strong morning breeze was blowing,—and, ascending by soaring circles high into the air, drift off *across* the wind, till, apparently striking a scent, they would in a body move away *up* the wind to disappear in the distance, or, as in several instances in my knowledge, to locate and settle upon carrion known to me, or within my sight.

I have also seen them drifting along *with* the wind till, striking a scent, they would work *back up* the wind, and settle down to feast. Taking into account the fact that they had drifted some way past the spot at last located, before locating it, it would seem to prove that they had *not seen* it in passing at first, but only took cognizance of it after striking the current of air which carried the scent.

I have, upon two occasions, seen them come into view at a great altitude, and sailing down *into* the wind, pass by, one after another, with a rushing sound and great velocity, until a dozen to twenty or more had come into view, bound for some carrion which was beginning to 'smell to heaven,' carrion which I knew of, and knew to be concealed in dense scrub growth. In one case of a large wild boar killed and left in a dense growth of scrub higher than my head, and in which it was almost impossible to make any headway, and which was a mass of verdure overhead, the Buzzards found the place and were perched all about on the scattering trees; but I saw none down in the brush, which was so dense I almost doubt the possibility of their rising out of it if once they had got in. It would have been a case of wonderfully sharp vision which could have discovered this, unaided by any other sense. A 'razor-back,' killed and dressed in the morning, in a dense growth of palmetto, overtopped by high, dense brush, all of it higher than a man's head, and the offal thrown out of the way, back into the growth, was found by the Buzzards before night. I do not think it was possible for it to have been seen from above.

In the case of offal taken and covered up with care under a pile of muck and weeds, when it was old enough to throw off a strong smell, the Buzzards scented it, but had not noticed or descended to the spot before.

While plowing at one time, I killed a quite large coach-whip snake, and turned a furrow over it, covering it up completely from sight; the next day the Buzzards had found the place and were down tramping about over the spot in their efforts to find and get it out.

Scrap meat and lungs, from dressing meat, were put into my poultry house, which was shut up, with the exception of a small, low opening into the high picket yard about the building; the Buzzards were attracted in a couple of days, and haunted the spot as long as any smell was left; this occurred a number of times.

One morning I shot and killed a skunk upon the bank of the lake just in front of my house. With a hoe, I pulled it out from the brush and roots, dug a hole and buried it, covering it completely. Going to the house I awaited developments; the wind was then in the northeast; in less than a half hour there were

over forty Buzzards collected there on neighboring trees and the ground, all having come from the southwest, off over the meadow, appearing in sight and coming straight *up the wind*. The birds unearthed the carcass and held a great war-dance and pow-wow over it. At another time, in the pine timber along the north shore of my lake, I drove another skunk into a hole, by clubbing, and stopped the hole up with sticks; in a short time there were several Buzzards investigating the cause of the outbreak, from the trees about the spot.

A box which had been leaning up by the side of my poultry house was blown down, or tipped down by hens flying upon it, and a chicken crushed under it, of which I knew nothing; but noticing the Buzzards sitting about the place on the trees and fence, I wondered what attracted them there, and soon after, upon moving the box, I found the dead fowl beneath. There was no other carrion present, to my knowledge, at the time.

These facts, while all showing conclusively to my mind that Buzzards do find the location of at least some of their food supply by means of a sense of smell as keen as that of a fox, yet it does not preclude the possibility or the probability that they are often guided or aided in location by a sight as keen as the sense of smell seems to be.

NOTES ON THE BIRDS OF FORT KLAMATH, OREGON.

BY DR. J. C. MERRILL, U. S. A.

With remarks on certain species by William Brewster.

[*Continued from p. 146.*]

Ceryle alcyon. Common in summer, several remaining throughout the winter.

Dryobates villosus harrisii. This was the most common species of Woodpecker during autumn and winter, and at that season more often found among aspens than were the others. This is the only place in the West where I have found *harrisii* to be more abundant than *gairdneri*. About the middle of March and later, as the breeding season approached,

they became shy and restless, the males drumming loudly on the dead top of some lofty pine, but ceasing whenever they were approached.

[Seven specimens collected by Dr. Merrill, with a single exception, are typical examples of a Woodpecker which of late years has been very generally if not exclusively called *P. harrisii* but which Cabanis and Heine very properly separated from that form as long ago as 1863.* Audubon's type specimens of *harrisii* came from the Columbia River, and both his plate and description show that they were decidedly brownish beneath. In the series furnished by my own collection, as well as that belonging to the National Museum, I find that all specimens from the Pacific Coast north of San Francisco to Puget Sound are similarly characterized. The depth and extent of the brownish varies, however, with different localities. The most extreme specimen—from Neah Bay, W. T.— has only the wing spots white, all the other light areas, both above and beneath, being smoky brown. Col. N. S. Goss, to whom I am indebted for this specimen, tells me that all the birds which he shot at Neah Bay were equally brown. Those which I have seen from Northern California, however, are somewhat lighter beneath, and the light space on the dorsum is usually pure white. Audubon's types, which were probably taken at some distance inland from the mouth of the Columbia, had the light stripes on the head as well as the middle of the back. Thus it is probable that the birds obtained by Col. Goss represent the extremes of the smoky Northwest Coast form, which to the southward and eastward shades insensibly into *hyloscopus*. In fact, one of Dr. Merrill's skins clearly proves such intergradation, for it has the breast decidedly brownish and the throat slightly so, while the abdomen, flanks, and light areas of the tail-feathers are essentially white.

Picus hyloscopus was based on the "*P. harrisi* from Southern California and New Mexico," which, the describers state, "differs from *harrisi* of the Columbia River Region in being smaller, and white instead of brownish, beneath." All the so-called Harris's Woodpeckers which I have seen from the interior of Western North America north of Mexico have the light areas, both above and beneath, essentially pure white, although the breast and tail-feathers are often superficially soiled or stained by contact with burnt trees or decayed wood. There is little variation among them excepting in size, those from the southern border averaging somewhat smaller than more northern ones. It is possible that, as material accumulates, it will be found necessary to separate this white-breasted Woodpecker into two forms, a large northern and a small southern one. For the present, however, they may be best treated as one, for which the name *hyloscopus* should be used.—W. B.]

Dryobates pubescens gairdneri. During my residence at Fort Klamath I paid especial attention to the Woodpeckers at all seasons, yet I saw but three specimens of this species; the dates were Nov. 17, April 28, and May 11.

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* Mus. Hein., IV, p. 69.

Xenopicus albolarvatus. This interesting Woodpecker was first observed November 9; by December it had become rather abundant and so continued until the latter part of February, but after the middle of March none were seen. During the breeding season careful search failed to reveal its presence near the Fort, nor was it found in the higher mountains north of the valley in July and August. One would think that the peculiar coloration of the White-headed Woodpecker would make it very conspicuous and its detection an easy matter, but this is by no means the case, at least about Fort Klamath. On most of the pines in this vicinity there are many short stubs of small broken branches projecting an inch or two from the main trunk. When the sun is shining these projections are lighted up in such a manner as to appear quite white at a little distance, and they often cast a shadow exactly resembling the black body of the bird. In winter when a little snow has lodged on these stubs the resemblance is even greater, and almost daily I was misled by this deceptive appearance, either mistaking a stub for a bird or the reverse.

I have rarely heard this Woodpecker hammer, and even tapping is rather uncommon. So far as I have observed, and during the winter I watched it carefully, its principal supply of food is obtained in the bark, most of the pines having a very rough bark, scaly and deeply fissured. The bird uses its bill as a crowbar rather than as a hammer or chisel, *prying* off the successive scales and layers of bark in a very characteristic way. This explains the fact of its being such a quiet worker, and as would be expected it is most often seen near the base of the tree where the bark is thickest and roughest. It must destroy immense numbers of Scolytidæ, whose larvæ tunnel the bark so extensively, and of other insects that crawl beneath the scales of bark for shelter during winter. I have several times imitated the work of this bird by prying off the successive layers of bark, and have been astonished at the great number of insects, and especially of spiders, so exposed. As the result of this, and of its habit of so searching for food, the White-headed Woodpeckers killed here were loaded with fat to a degree I have never seen equalled in any land bird, and scarcely surpassed by some Sandpipers in autumn.

Though not shy, and with care generally approachable to within a short distance, it is watchful and suspicious, and seems to know very well what is going on even if it does not see fit to fly away, though it is more apt to do this than to dodge around the trunk. The flight is direct, and rather slow and heavy. Its skull is noticeably less hard and dense than that of *D. harrisii* or *P. arcticus*. During the winter it is silent, the only sound I have heard it make being a harsh screech when wounded.

[Dr. Merrill has called my attention to the following apparent inaccuracies in the description of this Woodpecker by our leading authorities. (1) The statement usually made without qualification that the entire head is white. In the series of twelve specimens before me (five from Fort Klamath, five from Blue Cañon, California, and two from San Bernardino, California) the crown and forehead are decidedly grayish, varying from smoky gray to drab gray in rather strong contrast with the

silvery white of the throat, jugulum, and sides of the head. Capt. Bendire in Birds S. E. Oregon* says: "The white about the head is always soiled, becoming a light smoky gray." But as far as my series goes to show this gray is confined to the top of the head. Nor can I believe that it is a stain, for the top of the head is certainly not more exposed than are the jugulum and neck; moreover the gray is quite as deep in fresh-plumaged autumn birds as in those in worn breeding dress. Indeed among the specimens before me it is deepest in a young bird just from the nest. A more or less strong tinge of saffron or clay color often found on the nasal bristles and occasionally, also, on the forehead, may be, however, a true stain. Two of the females before me have the sides and posterior portion of crown barred faintly with dusky.

(2) Mr. Ridgway, in considering the generic characters of *Xenopicus*, has laid stress on "the fact that the tongue is scarcely extensile, its tip, when fully protruded, reaching only ¾ of an inch beyond the end of the bill, just the same as in *Sphyrapicus thyroideus*, while in *Picus villosus harrisii* the protrusion amounts to 2½ inches, or 1¾ inches more.†

In referring to this statement Dr. Merrill wrote me from Ft. Klamath under date of Jan. 6, 1887: "I have just killed a female *albolarvatus* and male *thyroideus*, and the following is the result of a careful examination and comparison. The tongue of *albolarvatus* extends exactly 1.30 inches beyond the tip of the bill, and this without any pulling but by gently drawing it to the full length. The tongue of my male *thyroideus* extends barely .20 of an inch." It is evident from this testimony that the character noted by Mr. Ridgway is too variable to be worth much.

(3) Mr. Ridgway says:‡ "Fourth and fifth quills equal and longest; tip of the first equidistant between sixth and seventh." In my series the first quill is always "spurious," never exceeding an inch in length. The second quill is sometimes scarcely longer than the eighth but is usually about intermediate between the seventh and eighth. In five specimens the fourth quill is longest; in four the fourth and fifth quills are about equal and longest. —W. B.]

Picoides arcticus. Rather common resident, but in the summer more frequently seen in the surrounding mountains than in the immediate vicinity of the Fort. Several nests were found early in July, but the young were fledged. The excavations were in dead young pines and not more than five or six feet from the ground, in the latter respect differing from those of the other Woodpeckers found here, all of which, so far as I have observed, make their holes at a greater height.

[Three specimens taken at Fort Klamath by Dr. Merrill differ appreciably from eastern birds in being larger, with longer and much narrower bills, and in having the nasal bristles nearly or quite black to their bases. Upon examining the series in the National Museum, however, I find that

* Proc. Boston Soc. Nat. Hist., Vol. XIX, p. 129.

† Proc. Nat. Mus., Vol. III, p. 6.

‡ Birds N. A., Vol. II, p. 526.

out of eighteen western specimens (Montana, Nevada, Utah, California, Oregon, and Alaska) only three exhibit the peculiarities just mentioned, and these three are from Fort Klamath (Coll. Capt. Bendire). It is evident, therefore, that if the Klamath birds represent a distinct form, that form has a very limited distribution. Until this is better known it seems wisest to let the bird in question stand as *P. arcticus*.—W. B.]

Sphyrapicus ruber. Common summer visitor, arriving about the middle of April and frequenting groves of aspens, being rarely seen among pines. It is rather shy, and specimens were procured with some difficulty. The stomachs of several were examined and contained fragments of insects only. It is a rather noisy bird, and its snarling or whining note is often heard. In Baird, Brewer and Ridgway's N. A. Birds, Vol. II, p. 544, the bill of this species is said to be brownish wax color; in my fresh specimens it was bluish black.

[An adult female taken May 11 shows an apparent approach to *S. v. nuchalis* in having a well-marked red nuchal band separated from the red of the crown by a blackish bar about .10 of an inch wide. This specimen also has a good deal of black mixed with the red of the breast, and there is a white stripe extending back along the side of the head below the eye, as in *S. nuchalis*.—W. B.]

Sphyrapicus thyroideus. A not uncommon resident, but shy and very suspicious. A noticeable habit here is the frequency with which it works down as well as up a trunk, and when one dodges around a tree, in which, by the way, it is unpleasantly expert, it is as apt to reappear twenty feet below where it was last seen, as above. In searching for food it will often work up and down a favorite tree repeatedly. In all its movements it is quick and active, and gives one the impression of being thoroughly wide awake, which impression the would-be collector is speedily convinced is correct. This Woodpecker is a rather silent bird as to hammering, and is especially partial to young pines, with the soft inner bark of which, and fragments of insects, the stomachs of the adults are usually filled; but the young birds appear to feed exclusively upon insects during the autumn.

In preparing skins of this and the succeeding species, I have had no difficulty in drawing the skin of the neck over the skull. Two nests, found June 20 in large dead pines, were each at a height of about sixty feet; they were inaccessible, but contained young, apparently nearly fledged, to judge by the noise they made. Each nest I watched for some time; the males brought food about twice as often as did the females, and frequently removed the excrement of the young on leaving the nest, alighting on the nearest tree for a moment to drop it and to clean their bills; I did not see either of the females remove any excreta. About four feet above one of the holes was another occupied by a pair of Pygmy Nuthatches, but neither species paid any attention to the other when they happened to arrive with food at the same time.

Melanerpes torquatus. None were seen until the morning of May 2, when several were in and about the Fort, their very characteristic flight, notes, and habits at once betraying their arrival. Rather uncommon

during summer, nesting usually near the tops of tall dead pines, especially isolated ones, from which they can obtain a good view of passing insects, which they will often follow to a considerable distance. About the middle of August many arrive from the north and gather in large flocks, sometimes of one or two hundred. They now feed largely on grasshoppers, for which they search in fields and along roadsides, and at a little distance are easily mistaken for Blackbirds.

Colaptes cafer. Seen once or twice only during the winter. In April they pass north in great numbers, and many remain to breed. Migrants were first seen March 14, and were abundant on and after the 20th.

Chordeiles virginianus. First heard on May 30 before sunrise, and within a week were fairly abundant. By the middle of June they were very common, and so continued till autumn.

[Dr. Merrill's Klamath series includes six adults, two males and four females. These are certainly much nearer to *virginianus* than to either *henryi* or *sennetti*, although they average rather paler than eastern specimens. In one of the males the white on the wing involves the shaft and a portion of the outer web of the outer primary. In both males the white on the tail is continuous across both webs of all the feathers.—W. B.]

Chætura vauxi. During the early autumn of 1886 this species was very common, leisurely migrating in flocks of from fifty to one hundred or more, and keeping well out of gunshot.

In the following spring they were first seen May 6, when a flock of about twenty was observed flying low over a meadow, and one was shot; no note was heard and they soon disappeared. No others were noted until the 19th, when four were seen pursuing insects above the tops of the highest trees. After this they became quite common, and so remained during the summer. While collecting in the marsh on the third of June a cold wind from the mountains suddenly arose; following the insects in their lowered flight, many Cliff and Tree Swallows that had been flying at a height of several hundred feet came within easy range, and among them were a few Swifts, of which I shot six in as many minutes. Four of them were males and two females; the ovaries of the latter were scarcely enlarged, and they certainly would not have bred for a month; the salivary glands of both sexes were of equal size; the legs and feet were purplish, the irides brown.

While the flight of Vaux's Swift is usually higher than that of the eastern species, and it is generally more difficult to obtain, yet if their habits are closely studied it will be observed that there are times and places where they may be shot without especial difficulty. The height at which they fly depending on that of the insects upon which they feed, they may be most readily secured soon after sunrise; as the day grows warmer and the insects fly higher they follow them and are soon out of gunshot range for the rest of the day, unless a change in the weather should occur. Had I made a specialty of collecting these Swifts, I could readily have shot several dozen during the season.

As observed at Fort Klamath this bird is not at all crepuscular; the

notes differ somewhat from those of *pelagica*, though of the same character, and are less frequently uttered.

Trochilus rufus. Only two specimens observed during the spring and summer, a male taken May 17 and another seen May 22.

Trochilus calliope. First taken May 17. A few Hummers, apparently of this species, had been seen for ten days before this date, but they were not abundant until the 16th, after which the males were common about the blossoms of wild currant and gooseberry bushes. During the breeding season they are generally distributed, and are to be found in deep pine woods as well as in more open places, the constant sharp shrill notes of the males indicating their presence and abundance. When pairing soon after their arrival, and with less frequency during the period of incubation, the males have a habit of poising themselves for some seconds at a height of thirty or forty feet above the ground, and then dashing down nearly to the earth, rising as quickly to poise again, and repeating the manœuvre often; at such times their notes are particularly loud, and attract attention from a considerable distance.

A nest brought to me about the middle of July, and which the young had just left, was placed upon a dead flattened cone of *Pinus contorta*. It was composed of thin strips of a gray bark, with a few spiders' webs on the outside; the lining was similar, but with a few small tufts of a cottony blossom from some tree; the nest was just the color of the cone, and was admirably adapted to escape notice. Another nest containing two nearly fledged young was found at about the same time, but was quite unlike the one just described in construction and situation, being of the common Hummingbird type and saddled upon a dead willow twig. One of the young birds lived for about a week, becoming very tame and feeding greedily upon syrup.

Baird, Brewer and Ridgway in N. A. Birds (Vol. II, p. 445) assert that the folded wings reach beyond the tail; that the under mandible of the male is "yellow"; that the length of the male is 2.75. I examined eight males and one female. In none of them did the folded wings extend beyond the tail. The average length of the males was 3.20 inches, the extremes were 3.10 and 3.30. The length of the single female was 3.35. The males had the upper mandible dead black, the lower mandible light flesh color darkening towards the tip which was black; the feet dark flesh color, the irides brown.

Tyrannus verticalis. Three or four specimens were observed in the autumn of 1886. One specimen only seen in the spring, on May 4.

Contopus borealis. Breeds sparingly among the pines, and generally distributed, but nowhere common.

Contopus richardsoni. Very common summer visitor, arriving about May 25. In July, when the young have left the nest, the males are especially noisy, and their loud *tweer* or *deer* note is heard till long after sunset. From published descriptions it would seem that this Pewee in the Rocky Mountain region usually builds its nest in an upright fork, much as Traill's Flycatcher does; while near the Pacific Coast the nest is

saddled on a horizontal limb, like that of the Wood Pewee, but is not covered with lichens. At Fort Klamath the nests are usually built on a horizontal pine branch, often at a considerable height; sometimes they are placed against upright twigs, at others merely saddled on the bare limb. Only one nest was found in an aspen tree. They averaged rather deeper than nests of *C. virens*, and were not coated with lichens. This species and *E. obscurus* were very abundant until August 17, and during that day also; but in the night there was a sharp frost, and the next day and thereafter none were seen.

Empidonax pusillus. Arrived about the last of May, and soon became abundant. Its favorite haunts, and to which it seems to be strictly limited, are the young willows growing along most of the streams, just such places as I have observed *E. traillii* to frequent in the East, and which species it greatly resembles in its habits and mode of nesting.

Empidonax hammondi. A male obtained May 12 and another August 16. No nests were found nor were any specimens taken during the breeding season, and I am inclined to believe that Hammond's Flycatcher occurs in this vicinity as a migrant only. Early in July, while in the mountains north of the valley and at a height of about five thousand feet, a pair of Empidonaces were observed that were certainly neither *pusillus* nor *obscurus*. They may have been *hammondi*, but I think they were probably *difficilis*. Unfortunately they were so shy that I was unable to shoot either of them.

Empidonax obscurus. A very common summer visitor, arriving somewhat earlier than does *E. pusillus*. During the breeding season Wright's Flycatcher is usually found in groves of aspens in company with the Warbling Vireo; also among pines with Cassin's Vireo and Richardson's Pewee. The nests are most frequently built in young aspens at an average height of about six feet. They resemble nests of the Yellow Warbler which are found in the same localities, but all the nests of this Flycatcher that I have found in aspens at Fort Klamath were built against the main trunk, while all of the Warbler were on branches and generally higher from the ground. The nests are composed externally of strips of light gray bark of about the same color as the bark of the aspens, and partly on this account, partly because they are against the trunk of the tree, they are apt to escape notice unless a careful search is made. The lining is sometimes a smooth felted mass of fur and horse hairs, at others feathers are used, and the nests are generally more deeply cupped than is usual with this group. Pairs that are found among the pines usually place their nests in an upright form of a manzanita or buckbrush bush that grow abundantly in such localities. They are more bulky, as a rule, and not so neatly made as when built in aspens, but in other respects are similar. The eggs are dull buffy white; seven sets of twenty-seven eggs average .68 × .53, the extremes of the sets being .65 × .50 and .72 × .57.

[A young male with stub tail, and wings only about two-thirds grown, taken July 13, differs from adults only in having the top and sides of head decidedly grayer, the wing-bands lighter and more buffy, and the under-

parts, especially the breast and flanks, strongly buffy. The adults collected by Dr. Merrill show a wide range of variation in size and color and some of them resemble *E. hammondi* very closely.—W. B.]

Otocoris alpestris strigata. Rather rare in winter, a few coming about the houses and stables during the deep snow in February. In the latter part of March many were found in a wet meadow (but which later in the season is dry) bordering the marsh. Here there are many little ridges rising a foot or two above the general level and but a few feet in width; the tops were, however, dry and in many places bare; to these the Larks were closely confined, each pair having its own limited range. On April 23rd and 25th they were mostly paired, and fifteen specimens were taken, ten males and five females; the testicles of the males were very large, but dissection of the females showed that they would not have laid for about a month. At this time, and for several weeks, the males are in full song, which is most often heard about sunrise and sunset, and is uttered as they perch in their peculiarly erect attitude on a stone or cow 'chip.' Often they rise high in the air, sometimes quite out of sight, and fly in circles for many minutes; when so doing their song is repeated more frequently than when on the ground, perhaps four or five times a minute, and at these moments they poise with set wings and are almost motionless. The height at which they fly is so great that often they may be seen to poise, and then to resume their circling flight before any note reaches the observer.

Of two females taken May 23, one contained an egg almost ready for extrusion, the other had very recently deposited her eggs and was sitting. Many pairs were observed, but for some days no nest was found. The male, who is constantly on the watch, seems to call the female off the nest when an intruder is still at a distance; several times I saw one approaching her mate, shaking her feathers and having evidently just left the eggs, but my efforts to flush one off the nest were fruitless though I made three visits to this locality before sunrise on cold windy mornings in hopes that at such a time they would sit close. In this respect these birds differ, at least in this locality, from the *arenicola* form, many of whose nests I have found in Montana.

Though within a limited area the Larks were very common, and the nesting site of each pair could easily be located within a few yards, it was only after many hours of very thorough and careful search and watching that on May 30 a female was seen to leave her completed nest. On June 4 this contained two eggs but was deserted, a horse having stepped on one edge and crushed it down, but fortunately without breaking the eggs. These measure .79 × .61 and .81 × .62, and bear a general resemblance to eggs of the other forms of this species, but having none of these at hand for comparison as this is written I will not describe them at length here. I believe these are the only eggs of *strigata* as yet collected, and the second set found.* This nest was placed at the base of, and partially

* See Auk, Vol. III, p. 166.

under, a raised clod of earth; a low weed concealed it from above, and it was admirably hidden; the rim was flush with the surface of the ground, and in composition and construction it was like Montana nests of *arenicola*, but was perhaps rather deeper than the average of these.

On June 17 another nest was found after much search in the meadow in front of the Fort;* it was placed under a weed growing on a wide, but low mound, deeply sunken in the earth, and contained three young about five days old, which were covered with a brownish yellow down. Four days later I again visited this nest, but one of the young had disappeared; the feathers of the remaining two were quite well developed and were blackish, widely edged with white, and as these colors were about equal in extent the young presented a peculiar marbled appearance; on the crown the light tips to the feathers were triangular in shape. On June 25 these young had abandoned the nest, but after some search I found one of them on bare ground about one hundred yards away. On July 1 I shot both parents and the other young, a male, now about nineteen days old and fully grown, flying as well as its parents. It is of interest to note that this female contained two eggs, one of which was almost ready for extrusion, and she had apparently just laid an egg.

There seems to be a good deal of uncertainty as to the number of eggs usually laid by the Shore Lark. Though unable to look the matter up thoroughly as I write this, it may be noted that Baird, Brewer and Ridgway merely quote Audubon's statement that four or five eggs are laid; that Dr. Coues, in 'Birds of the North West' and 'Birds of the Colorado Valley,' says nothing as to the number; in the latest edition of the 'Key,' that four or five are laid; and that Mr. Ridgway in his 'Manual' says three to five. My own experience, mostly with the *arenicola* form in Montana, is that three eggs constitute a full set though four are not infrequently found.

[*Young, first plumage* (♂ Fort Klamath, July 1, 1887, J. C. Merrill, M. D. No. 695). Above brownish black, the exposed surface of the closed wings bright hair-brown; entire upper surface conspicuously variegated with white or soiled white markings, those of the nape fine flecks, of the top of head sharply defined deltoid spots, of the back, scapulars, wing-coverts, and rump broad terminal bars; wing quills tipped with white and bordered along the outer webs with sandy buff; tail with the middle pair of feathers sandy brown, the others dull black, all the tail-feathers tipped and edged outwardly with white, this edging broadest, embracing most of the outer edge, on the outer pair of feathers; underparts soiled white, the cheeks and jugulum flecked with dusky, the breast and sides obscurely spotted with dull black, the remaining under surface immaculate. Dr. Merrill's series includes eight specimens in unmixed first plumage; of them, two are essentially similar to the bird just described and with it are easily separable from the corresponding stage of *O. a. praticola*

* The parents were one of the few pairs that were observed in the valley in dry open ground; but only in the colony near the marsh above referred to, and which a circle of about a mile in diameter would enclose, were the Larks at all common.

by the much more numerous and conspicuous white markings of the upper parts as well as by the whiter, less spotted underparts; from that of *arenicola*, *chrysolæma*, and *rubeus* by the much darker ground color above and the almost total absence of buffy or cinnamon tints either above or beneath; of the remaining five, four have the upper parts, especially the wings and tail, strongly tinged with dull cinnamon; three specimens approach dark examples of young *arenicola*. The eighth Klamath bird is plain dull seal brown above with but few and faint light markings. It is in worn and probably faded plumage. In the large series of adults collected by Dr. Merrill I find a good deal of variation with respect to the sharpness of the dark streaking above as well as the depth and extent of the vinaceous tints; only a few birds are as heavily streaked as Mr. Henshaw's description indicates, and but two have any yellow on the breast, while none show any yellow on the underparts posterior to the breast. A female taken Feb. 27, however, has the entire underparts (excepting, of course, the black cravat) pale primrose yellow. There are two similar examples in a series of some forty specimens collected at Klamath in September and October, as well as several with decided yellow breasts.—W. B.]

Pica pica hudsonica. Common in winter in and about the Fort, being attracted by the abundance of food. They visit the stables, yards, hencoops, and 'dump pile,' and are interested observers when a steer is butchered. During the deep snow in February they passed much of their time perched on the backs of the mules and horses. Late in March they began to leave for their nesting places, a favorite one being along the shore of Klamath Lake at Modoc Point. Here there is a dense growth of willows and plum brush extending for several miles, but usually only a few feet or yards in width. The stage road runs by the side of, and sometimes through, this strip, and on either side the nests, new and old, may be seen by dozens. A few pairs build along Wood River and other streams in the valley near the Fort, and among willows growing in the marsh. The nests are too well known to need description here; the eggs, from five to seven or eight in number, rarely nine, are placed either upon the bare mud bottom or upon a few fibrous rootlets that serve as an apology for a lining over the mud. The first set of eggs was taken at Modoc Point on April 8.

Cyanocitta stelleri. Common resident, and especially numerous about the Fort. Found to be rather scarce in the mountains in July and August, and rarely seen above sixty-five hundred feet.

[Two specimens, both adults, collected by Dr. Merrill, agree closely with some of the Crested Jays taken at Fort Walla Walla by Capt. Bendire,* having the general coloring of the head, neck, and back nearly, if not quite, as blackish as in true *stelleri*, but showing fully as much blue streaking on the forehead as in *frontalis*. They are evidently intermediates nearest *stelleri*.—W. B.]

Perisoreus obscurus. None were noticed about the Fort during the winter, though they are known to occur there sometimes at that season.

*Bull. N. O. C., Vol. VII, No. 4, p. 229.

In July and August I found this Jay abundant in the mountains north of the valley, roaming in families among the higher fir woods to which they were closely limited.

Corvus corax sinuatus. Common in winter, especially about the lake and marsh, fish and an occasional dead horse or steer supplying their food. They breed in the surrounding mountains.

Corvus americanus hesperis. Rather common in winter and in early spring. Rare in summer, but a pair or two breed among willows in the marsh, and in July a few were observed near the edges of Klamath Marsh.

Picicorvus columbianus. The movements of Clarke's Crow are uncertain, depending largely on the supply of pine cones. During my residence at Fort Klamath it was quite scarce, not more than six or eight having been seen in the immediate vicinity. In July and August it was common about Crater Lake and among the mountains north of the valley, where its summer range extends considerably lower than that of the Oregon Jay.

Cyanocephalus cyanocephalus. A large flock of these Jays passed most of the winter within a few miles of the Fort, and were especially noted by the settlers, as the birds were new to most of them and were said to be very rare visitants. They were noisy, and at once attracted attention as they moved rapidly through the pines, and once visited the Fort in their wanderings. This flock was last seen about March 20, though I heard a single bird in pine woods near Williamson's River on May 21.

Xanthocephalus xanthocephalus. Breeds abundantly in the marsh among the tules, where fresh eggs were taken from the latter part of May till July. Whatever may be the case elsewhere, in this vicinity the males do not desert their mates during incubation, as has been stated to be their habit.

Agelaius phœniceus. Very common in the marsh by the latter part of March. Nests found May 27 contained half-grown young. None were found in the willows that the birds frequent, but all were placed in tussocks of grass and composed almost entirely of the dead grass of the tussock, the blades being woven so as to form the nest, but still attached by the roots; the new grass growing up partially concealing the nest. Some of them may have belonged to the next species; it was difficult to identify the eggs positively, as the birds were constantly rising, and before I could see whether any particular one had been feeding or had just left its nest, and shoot it, it had joined and become lost in the noisy throng that was circling about.

Agelaius tricolor. A few seen among the common Redwings, the white band on the wings of the males being conspicuous, and readily distinguishing them, when flying, from that species.

Sturnella magna neglecta. Common during summer, arriving March 22, and becoming numerous three days later.

Icterus bullocki. Breeds sparingly at Modoc Point, and more commonly near Linkville. Not observed in the immediate vicinity of the Fort.

Scolecophagus cyanocephalus. Common in summer, and a few pass the winter. Here the nests are almost always placed on the ground.

(*To be continued.*)

DESCRIPTION OF A NEW *TITYRA* FROM WESTERN MEXICO.

BY ROBERT RIDGWAY.

Tityra personata griseiceps RIDGW.

Tityra personata LAWR. Mem. Bost. Soc. II, pt. iii, No. 2, 1874, 289 (Mazatlan and Sierra Madre of Colima); *nec* JARD. & SELBY.

SUBSP. CHAR.—Similar to true *T. personata*, but female much paler and grayer, with pileum and sides of head pale brownish ash-gray, becoming lighter anteriorly, instead of deep brownish gray or grayish brown abruptly contrasted with white of throat; chin without trace of grayish or dusky.

HAB.—Western Mexico (Mazatlan and Sierra Madre of Colima).

Type. No. 58,235, U. S. Nat Mus., ♀ ad., Mazatlan; Col. A. J. Grayson.

DESCRIPTION OF A NEW SPECIES OF HUMMINGBIRD OF THE GENUS *AGYRTRIA*.

BY D. G. ELLIOT, F. R. S. E.

Agyrtria alleni, sp. nov.

Top of head and occiput dark greenish blue, not metallic; nape, back and shoulders, shining grass-green; rump and upper tail-coverts glittering bronze. Tail shining bronze, with the tips of the feathers pale gray, widest on the outermost rectrices, and diminishing to the central ones which have a mere indication of gray at the tip. Wings purplish brown. Sides of neck shining bluish green. Throat and centre of breast white, speckled with shining green; sides of breast and flanks metallic grass-green. Abdomen whitish. Under tail-coverts pale brown, edged with white. Maxilla black, mandible flesh color, tip black, Feet black.

Total length, 3 1-2 in.; wing, 1 7-8 in.; tail, 1 7-16 in.; bill, 3-4 in.

HAB.—Yungas, Bolivia. (Rusby.)

Type, No. 30,784, Am. Mus. Nat. Hist., New York City.

A single specimen of the bird described above was contained in a small collection of birds brought from Bolivia by Dr. H. H. Rusby and purchased by the American Museum of Natural His-

tory in New York. My friend, Prof. J. A. Allen, the Curator of the zoölogical department of the Museum, having placed the Hummingbirds contained in the collection in my hands for identification, I have great pleasure in giving his name to this apparently new bird. The only known species with which this one can be compared seems to be the *Thaumatias cæruleiceps*, Gould, P. Z. S. (1860), p. 240, from Bogotá, now I suppose contained in the British Museum collection, but it differs from that bird in some seemingly important particulars. The greenish blue of the head is not shining, but rather dull, and does not extend onto the back of the neck. The tail of shining bronze instead of having "a faint indication of a zone of brown across the outer feathers near the tip," has all the rectrices tipped with pale gray, very conspicuous on the outermost feathers, gradually diminishing in extent to the central pair, which have but an indication of gray at the tip. The under tail-coverts instead of being gray with brown centres, are pale brown with white edges. In size the two species seem to be about equal, except that the tail of *cæruleiceps* is stated to be but *half an inch* in length, while that of *A. alleni* is 1 7-16 inch. It is possible that there may be a typographical error in the figures given of the length of tail in Mr. Gould's species. Professor Allen will later on publish a list of the species contained in Dr. Rusby's collection.

ON A NEW SUBSPECIES OF *AMMODRAMUS SANDWICHENSIS* FROM MEXICO.

BY AMOS W. BUTLER.

CERTAIN peculiarities in some Savanna Sparrows taken by me in the winter of 1879-80, within the Valley of Mexico, induced me to undertake a comparison with the forms generally recognized as Mexican and with the United States form which might possibly extend toward the Mexican plateau in winter. In my studies I have, through the kindness of Mr. Robert Ridgway and Mr. J. A. Allen, been permitted to examine the series of Western and Mexican Savanna Sparrows in the U. S. National Museum and in

the American Museum of Natural History. I collected at least six Sparrows of this genus in the district mentioned, five of which I now have before me, one of them being kindly loaned by Mr. F. S. Wright, of Auburn, N. Y.

The specimens differ much from *A. sandwichensis alaudinus*, both in proportions and in being darker. In this they somewhat approach *A. s. bryanti*, but their large bills and brighter coloring, together with the noticeable difference in the pattern of coloration, render it easy to distinguish them.

Ammodramus sandwichensis brunnescens, subsp. nov.

PLATEAU SPARROW.

SUBSP. CHAR.—Dark as in *A. s. bryanti* but much browner. Bill larger than in any of the subspecific forms, being only exceeded by that of *A. sandwichensis* itself.

Male. Above grayish shaded with light brown; top of head and back heavily spotted with black which is edged with bright brown; secondaries, tertials, upper tail-coverts, and sometimes the primaries and outer tail-feathers, edged with brown varying from cinnamon to chestnut; median stripe buff, superciliary stripe creamy to pale yellow; sides of head grayish brown spotted with black, sometimes a very distinct malar stripe of white or pale buff, below which the black spots are arranged in a stripe; chin and gular region white or light buff almost free from spots; jugulum, breast, and along the sides heavily streaked with dark brown and black and generally tinged with some shade of buff.

Female. Slightly lighter than the male; the brown edgings of the black spots on the back bordered with gray; streaks on the breast and sides smaller, the tinge of buff paler.

Wing, 2.60-2.85; average, 2.746. Tail, 1.95-2.10; average, 2.03. Tarsus, .75-.80; average, .786. Culmen, .42-.44; average .424. Depth, .21-.22; average, .212.

♂ (No. 3,	author's	coll.)	Valley of Mexico, Nov. 20, 1879.
♂ (No. 29,	"	")	Valley of Mexico, Dec. 8, 1879.
♀ (No. 58,	"	")	Valley of Mexico, Dec. 22, 1879.
♀ (No. 30,	"	")	Valley of Mexico, Dec. 8, 1879.
♂ (No. 792, F. S. Wright		")	Valley of Mexico, Dec. 18, 1879.

HAB.—In winter the Valley of Mexico.

There are two other specimens besides the five mentioned that appear to be referable to this form. One of these, a female from the valley of Mexico, without date, is now in the American Museum of Natural History, New York. It fulfils all of the requirements except it has a peculiarly light brown tail, while in the

types the tails are black. Another (No. 78,124 U. S. Nat. Mus., ♀ ad., Guanajuato, Mexico, A. Dugès), is very much worn and badly discolored. The species is found in considerable numbers among the bushes and grasses along the drainage canals and about the lake shores.

A full series of the Savanna Sparrows is greatly needed from all parts of Mexico and Central America, and it seems not improbable that one or two other forms will have to be characterized before the specimens will begin to fit gracefully into the places assigned to them.

DESCRIPTION OF A NEW *MYIARCHUS* FROM THE WEST INDIES.

BY CHARLES B. CORY.

Myiarchus berlepschii, sp. nov.

SP. CHAR. (Type, No. 12,535 Coll. C. B. Cory.) Top of the head dark brown; back and rump distinctly dark olive, shading into rufous on the tips of the upper tail-coverts. Throat pale ashy, somewhat darker on the upper breast; rest of underparts pale yellow. Primaries and secondaries dark brown edged with dull rufous, the rufous color wanting on the terminal portion of the four outer primaries. The primaries show pale rufous on the basal portion of the inner webs. All the secondaries and tertials are broadly edged with pale rufous on the inner webs. Tail dark brown; all the tail-feathers, excepting the two middle ones, have nearly the entire inner webs bright rufous, a narrow line of brown separating the rufous from the shaft of the feather. Bill dark brown. The feet are black.

Length, 7; wing, 3.50; tail, 3.25; tarsus, .95; bill, .65.

HABITAT. Island of St. Kitts, West Indies.

The underparts of this species are similar in marking and general coloration to *M. oberi*, but the throat is more ashy and lighter, and the yellow of the belly is paler. The back and head of *M. berlepschii* are darker, and the bird is smaller.

*Dedicated to Graf Hans von Berlepsch of Germany.

A LIST OF BIRDS OBSERVED AT GAINESVILLE, FLORIDA.

BY FRANK M. CHAPMAN.

GAINESVILLE is situated in the southeastern part of Alachua County, midway between the Gulf and the Atlantic, a position which, during the winter, proved excellent collecting ground for the species which should occur there at that season, but the distance from either coast rendered it a comparatively isolated point during migration.

Evidently the peninsula acts as a wedge dividing into two waves, which flow up either coast, the sea of north-bound migrants; from these waves small streams of summer residents penetrate the interior in search of breeding places, and these, in addition to occasional ripples caused perhaps by a high-tide, constitute the entire migration.

How closely migrating birds adhere to the coast is well illustrated by the fact that of the thirty-five arrivals noted, twenty-six are summer residents of the Louisianian Fauna, leaving but nine strictly transient birds as the number observed, where forty or more might have occurred. The capture of four species which have not, to my knowledge, been before recorded from Florida during the winter, may also be due to this inland position; for these birds probably drifted in with flocks of true winter residents, and being thus removed from the coast currents, were left stranded. The country surrounding Gainesville is favorable for occupation by all the species which should occur there, there being, 'black-jack' and palmetto piheries, hummocks, thickets, clearings, swamps, 'prairies,' numerous small ponds and streams, and Alachua Lake, about nine miles long and averaging two or more in width. This lake, as the chief ornithological point of interest, deserves particular mention; a large portion of its surface is covered with a dense growth of yellow pond lilies (*Nuphar advena*), locally known as 'bonnets,' affording a home to innumerable Coots (*Fulica americana*) and Ducks. At its eastern end is an immense savanna bisected by an inflowing creek, and dotted with clumps of cypresses and numberless small pools. A few years ago Herons were abundant and bred

here; today it is comparatively deserted, the result of merciless persecution by plume hunters. One other locality remains to be noticed,—an almost impassable swamp, known as 'Sugar-foot Prairie,' a favorite breeding ground for several species of Herons.

March 8, I visited this place and my notes for that day record: Great Blue Heron, Great White Egret, and Little White Egret, all common; Little Blue Heron, abundant; Black-crowned Night Heron, one; Bittern, three. April 17, 20, and 21, I again went there and the total number of Herons seen on the three days was: Great Blue Heron, two; Great White Egret, one; Louisiana Heron, one; Little Blue Heron, ten.

Later I learned that a plume hunter's camp, with its pile of decaying carcasses, had been found there, and the cause of the disappearance of the Herons was no longer a mystery.

The following notes are based almost entirely on observations made from November 27, 1886, to May 27, 1887; for, although a return was made to the same locality the following winter, my stay was a comparatively short one and permitted but little additional work.

All data, therefore, unless the contrary is stated, refer to the first mentioned period. I have to thank Mr. Roth Reynolds for permission to examine a number of Gainesville birds in his possession, mounted by himself, mention being made in each case when a record is based on such examination.

For comparison I append the mean temperature of each month during the winter and spring of 1886-7: December, 53.2°; January, 50.9°; February, 66.4°; March, 61.8°; April, 68.6°; May, 77.1°.

1. **Podilymbus podiceps.** PIED-BILLED GREBE. 'DIE DIPPER.'—Common; none were observed after April 27.

2. **Urinator imber.** LOON.—From March 31 to April 17 about fifteen were seen flying over at a great altitude.

3. **Anhinga anhinga.** ANHINGA.—Three extremely wild birds wintered among the cypresses on the lake; April 12 two flocks of seven or eight each were seen passing over, and on the 26th a flock of six more.

4. **Lophodytes cucullatus.** HOODED MERGANSER.—A rare winter resident.

5. **Anas boschas.** MALLARD.—Not uncommon.

6. **Anas obscura.** BLACK DUCK.—Not uncommon.

The Florida Black Duck was not found, and was unknown to local sportsmen, even as a summer resident.

7. **Anas strepera.** GADWALL.—A female was taken February 8, the

first one, I think, reported from the State. Six were seen and one killed January 11, 1888.

8. **Anas carolinensis.** GREEN-WINGED TEAL.—Common.

9. **Anas discors.** BLUE-WINGED TEAL.—Rather more common than the last. Last records were April 27, two, and April 29, one.

10. **Anas americana.** BALDPATE.—Not uncommon.

11. **Spatula clypeata.** SHOVELLER.—A single specimen in Mr. Reynolds's possession.

12. **Dafila acuta.** PINTAIL.—Not uncommon.

13. **Aix sponsa.** WOOD DUCK.—Common resident.

14. **Aythya affinis.** LESSER SCAUP DUCK.—Common.

15. **Aythya collaris.** RING-NECKED DUCK.—The most abundant Duck. At the time of my departure, May 27, a flock of cripples, four males and three females, was in an arm of the lake, and I was told that crippled Ducks (the results of flock shooting during the winter) of different species frequently remain through the summer, but although, as in the present instance, both sexes may be represented, they have never been known to breed.

16. **Erismatura rubida.** RUDDY DUCK.—Not uncommon.

17. **Ajaja ajaja.** ROSEATE SPOONBILL.—None were observed by myself, but three were reported to me by my friend Mr. Bell on April 23, and Mr. Reynolds had a specimen in his collection.

18. **Guara alba.** WHITE IBIS.—March 4, 1887, and January 11, 1888, one observed each day.

19. **Botaurus lentiginosus.** AMERICAN BITTERN.—Locally common.

20. **Ardea herodias.** GREAT BLUE HERON.—Common.

21. **Ardea egretta.** AMERICAN EGRET.—Not uncommon during the winter, and frequently observed until its plumes were sufficiently grown to render them worthy the plume hunter's attention, when it became almost rare and exceedingly shy.

22. **Ardea candidissima.** SNOWY HERON.—The same remarks apply to this species.

23. **Ardea tricolor ruficollis.** LOUISIANA HERON.—Not uncommon. Almost all those observed were adult birds.

24. **Ardea cærulea.** LITTLE BLUE HERON.—The most common Heron. The blue slightly outnumber the white birds, and but three in intermediate plumage were seen.

25. **Ardea virescens.** GREEN HERON.—One seen January 28 was the only one observed until April 4, when new arrivals were noted. They were common throughout May, and on the 25th of that month young just from the nest were taken.

26. **Nycticorax nycticorax nævius.** BLACK-CROWNED NIGHT HERON.—Locally common.

27. **Rallus elegans.** KING RAIL.—Two specimens taken by Mr. Reynolds at the lake.

28. **Porzana carolina.** SORA.—A single specimen in Mr. Reynolds's possession was taken at the lake.

29. **Ionornis martinica.** PURPLE GALLINULE.—None were seen until May 25, when in a part of the lake before unvisited,—a mass of floating islands and 'bonnets',—I found them not uncommon. Four were taken; in the oviduct of one a partially formed egg was found, and several eggs had evidently been deposited.

30. **Gallinula galeata.** FLORIDA GALLINULE.—Common resident.

31. **Fulica americana.** AMERICAN COOT. 'BLUE PETER.'—Extremely abundant, every 'bonnet' patch contained its flock, all equally noisy until as spring advanced they became almost silent. A number remained until April 29, all those seen after that date being wing-broken birds, which, unlike the crippled Ring-necked Ducks before mentioned, did not gather in flocks but were met with singly, lurking in the 'bonnets' at the borders of the lake.

32. **Philohela minor.** AMERICAN WOODCOCK.—December 3 and 24, one was seen each day.

33. **Gallinago delicata.** WILSON'S SNIPE.—Locally abundant, sometimes flocks of fifty or more being flushed from favorable feeding grounds. Two seen together April 15, were the last noted.

34. **Totanus flavipes.** YELLOW-LEGS.—A flock of five was seen March 5, and a single bird April 5.

35. **Totanus solitarius.** SOLITARY SANDPIPER.—From April 2 to May 6, twelve were seen or taken.

36. **Bartramia longicauda.** BARTRAMIAN SANDPIPER.—April 8, two were seen, April 10, three.

37. **Actitis macularia.** SPOTTED SANDPIPER.—From April 27 to May 10, seven were noted.

38. **Ægialitis vocifera.** KILLDEER.—An abundant winter visitant. My last records were April 27 and 29, one each day.

39. **Colinus virginianus floridanus.** FLORIDA BOB-WHITE.—Abundant. The call of two, and rarely three, notes was first heard March 17, and although they were now beginning to pair, flocks were seen as late as April 16.

40. **Meleagris gallopavo.** WILD TURKEY.—Rare.

41. **Ectopistes migratorius.** PASSENGER PIGEON.—Said by sportsmen to be a rare winter visitant; Mr. Reynolds had two in his possession.

42. **Zenaidura macroura.** MOURNING DOVE. 'DOVE.'—Common resident.

43. **Columbigallina passerina.** GROUND DOVE. 'MOURNING DOVE.'—Common. A nest found May 12, on the ground beneath a small scrub palmetto, contained two eggs.

44. **Cathartes aura.** TURKEY VULTURE.—Abundant.

45. **Catharista atrata.** BLACK VULTURE.—Abundant. There was apparently little difference in the numbers of this and the preceding species, but the first named was much more common in the town.

46. **Elanoides forficatus.** SWALLOW-TAILED KITE.—April 29, three, May 9 and 10, one each day. All escaped capture.

47. **Ictinia mississippiensis.** MISSISSIPPI KITE.—Two were noted April 29.

48. **Circus hudsonius.** MARSH HAWK.—Common.

49. **Accipiter velox.** SHARP-SHINNED HAWK.—Not uncommon.

50. **Accipiter cooperi.** COOPER'S HAWK.—Not common.

51. **Buteo borealis.** RED-TAILED HAWK.—Common.

52. **Buteo lineatus.** RED-SHOULDERED HAWK.—Abundant. The nine specimens obtained were all true *lineatus*.

53. **Haliaëtus leucocephalus.** BALD EAGLE.—Common.

54. **Falco sparverius.** AMERICAN SPARROW HAWK.—Abundant resident.

55. **Falco columbarius.** PIGEON HAWK.—A single specimen was taken January 4.

56. **Pandion haliaëtus carolinensis.**—AMERICAN OSPREY.—Common.

57. **Strix pratincola.** AMERICAN BARN OWL.—I saw but two; one, an almost fully grown male, was brought to me alive May 30. During his short life (his death, June 19, was due to an accident) he proved an interesting but perfectly untamable pet; fresh meat was refused, but Sparrows (*Passer domesticus*) he devoured with great relish, pulling out most of the wing and tail-feathers and swallowing the body without further dissection.

58. **Syrnium nebulosum alleni.** FLORIDA BARRED OWL. — Common. Two nearly grown young attended by the parent birds were seen May 9.

59. **Megascops asio floridanus.** FLORIDA SCREECH OWL. —Said to be common. A single specimen was secured March 12.

60. **Bubo virginianus.** GREAT HORNED OWL.—A specimen in the possession of Mr. Reynolds was taken at Gainesville.

61. **Coccyzus americanus.** YELLOW-BILLED CUCKOO.—A not common summer resident. Arrived April 27.

62. **Ceryle alcyon.** BELTED KINGFISHER. — Common during the winter, but after April 2 their numbers had greatly diminished.

63. **Dryobates villosus audubonii.** SOUTHERN HAIRY WOODPECKER.—Common.

64. **Dryobates pubescens.** DOWNY WOODPECKER. — Slightly more numerous than the last.

65. **Dryobates borealis.** RED-COCKADED WOODPECKER. — Common, but confined exclusively to the pineries.

66. **Sphyrapicus varius.** YELLOW-BELLIED SAPSUCKER. — Common, and very generally distributed. Last noted April 21.

67. **Ceophlœus pileatus.** PILEATED WOODPECKER.—Rather rare. The individuals met with were extremely unsuspicious; I have even placed my ear at the base of the tree on which they were pounding.

68. **Melanerpes erythrocephalus.** RED-HEADED WOODPECKER. — But thirteen birds of this species were seen until April 16, when new arrivals were noted, and after the 26th of that month they were very numerous. This species was common throughout the winter of 1887-88.

69. **Melanerpes carolinus.** RED-BELLIED WOODPECKER.— Abundant.

70. **Colaptes auratus.** FLICKER.—Abundant up to the last of March, after which date they were less numerous.

71. **Antrostomus carolinensis.** CHUCK-WILL'S-WIDOW.—Common summer resident.

72. **Antrostomus vociferus.** WHIP-POOR-WILL.—None were heard, and a female, taken March 3, was the only one observed.

73. **Chordeiles virginianus chapmani.** CHAPMAN'S NIGHTHAWK.—Arrived April 17, and became common on the 21st, after which date no change was noticed in their numbers. 'Bullbat,' or as it is more frequently termed, 'Bat,' shooting is here a popular pastime, great numbers being killed for food, and in August, when the birds have gathered in flocks, favorite fields may be occupied at nightfall by as many as a dozen shooters.

74. **Chætura pelagica.** CHIMNEY SWIFT.—Arrived April 5, and was common after the 16th.

75. **Trochilus colubris.** RUBY-THROATED HUMMINGBIRD.—Five were observed from March 8 to April 27.

76. **Tyrannus tyrannus.** KINGBIRD.—A common summer resident. Arrived April 2, and became common on the 5th.

77. **Myiarchus crinitus.** CRESTED FLYCATCHER.—An abundant summer resident. Arrived March 31, and became common April 5.

78. **Sayornis phœbe.** PHŒBE.—An abundant winter visitant, and very generally distributed. Last records were March 21 and April 4, one each day.

79. **Contopus virens.** WOOD PEWEE.—A rather common summer resident, arriving April 7. A nest found May 9 was placed on the horizontal limb of a pine, about forty feet from the ground.

80. **Empidonax acadicus.** ACADIAN FLYCATCHER.—Not uncommon in the denser woods; arrived April 20. A completed nest, found May 9, was constructed almost entirely of 'Spanish moss,' and contained on the 27th two eggs with half formed embryos.

81. **Cyanocitta cristata florincola.** FLORIDA BLUE JAY.—Extremely tame and everywhere abundant, frequenting the live and water oaks of the city streets, where it appears half domesticated. It possesses greater vocal powers than the northern bird (*C. cristata*); twenty or more different and distinct calls were counted.

82. **Corvus americanus floridanus.** FLORIDA CROW.—I saw less than ten, all some distance from the town in the larger pineries.

83. **Corvus ossifragus.** FISH CROW.—Common only in the vicinity of small ponds and the lake.

84. **Dolichonyx oryzivorus.** BOBOLINK.—January 5, a female having the secondaries missing from one wing was caught by our dogs while Quail shooting. April 26, small flocks were heard passing over, and on the 29th flocks of several hundred males in full song were seen.

The oats were now nearly ready to harvest and considerable damage was done to them by these birds. On my last visit to the oat-fields, May 25, both sexes were as abundant as at any previous time.

85. **Molothrus ater.** COWBIRD.—Not uncommon.

86. **Agelaius phœniceus.** RED-WINGED BLACKBIRD.—Abundant, the

sexes being generally in separate flocks; the males frequenting the pines, the females open fields; but in the vicinity of water both sexes were associated. A nest containing four eggs was found May 6.

87. **Sturnella magna mexicana.** MEXICAN MEADOWLARK.—Abundant. Comparison will not permit me to refer the small, dark Meadowlark, resident in Florida, to *Sturnella magna*, and while they are not fully typical of *S. m. mexicana*, they approach it so closely as to apparently render subspecific separation impossible. Florida birds are perhaps slightly darker above, the neck gorget is somewhat wider, and the yellow of the underparts has more of a sulphur tint than in Mexican specimens, bnt in measurements, as the appended table shows, there is little, if any, difference in birds from the two regions.

	No. Specimens.	Sex.	Average Wing.	Average Tail.	Average Tarsus.	Average Culmen.
Florida specimens	4	♂	4.37	2.92	1.45	1.23
Mexicana	4	♂	4.48	2.89	1.46	1.24
Florida specimens	6	♀	4.12	2.81	1.34	1.08
Mexicana	6	♀	4.12	2.81	1.40	1.17

88. **Icterus galbula.** BALTIMORE ORIOLE. — A male was taken December 15, and on February 4 a second was seen and heard calling among the blossoms of the cypress.

89. **Icterus spurius.** ORCHARD ORIOLE.—A rare summer resident.

90. **Scolecophagus carolinus.** RUSTY BLACKBIRD.—A common winter resident. Last seen April 14.

91. **Quiscalus quiscula aglæus.** FLORIDA GRACKLE. — Common only in the city where there were a number of flocks, all very tame.

92. **Quiscalus major.** BOAT-TAILED GRACKLE. — Abundant. On one occasion a number were noticed jumping from the ground at passing insects. A singular note of this species greatly resembles the flapping of wings, as of a Coot tripping over the water; this sound was very familiar to me, but so excellent is the imitation that for a long time I attributed it to one of the numerous Coots which abound in most places favored by *Q. major*.

93. **Carpodacus purpureus.** PURPLE FINCH. — Rather rare during the winter of 1886-87, but not uncommon the following year.

94. **Spinus tristis.** AMERICAN GOLDFINCH.— Common in small flocks up to April 15.

95. **Poocætes gramineus.** VESPER SPARROW.—Very abundant. Last noted April 9.

96. **Ammodramus sandwichensis savanna.** SAVANNA SPARROW. — Even more abundant than the preceding. My last record was May 6.

97. **Ammodramus savannarum passerinus.** GRASSHOPPER SPARROW.— Common.

Mr. Maynard's southern form of the Yellow-winged Sparrow (*Ammodramus australis*), is described as being "similar to the northern Yellow-wing, but smaller, darker, and in all stages of plumage streaked across the breast."* My series of fifteen specimens average, wing, 2.36; tail, 1.81; tarsus, .71. Three of these have streaks on the breast, but none are more heavily marked than a specimen in my collection taken at Englewood, N. J., with which they agree in size, and none are darker than any northern specimens I have seen.

98. **Zonotrichia albicollis.** WHITE-THROATED SPARROW. — Common, as late as April 27.

99. **Spizella socialis.** CHIPPING SPARROW.—Abundant in large flocks at the borders of fields.

100. **Spizella pusilla.** FIELD SPARROW. — A common winter resident, found in the same situations as the last. I saw none after April 16.

101. **Peucæa æstivalis.** PINE-WOODS SPARROW. — Arrived March 31. Common in only one locality, a high, open palmetto pinery, where, May 21, a nest with four fresh eggs was found.

101 *a*. **Peucæa æstivalis bachmanii.** BACHMAN'S SPARROW. — Three were taken during the winter in a 'black-jack' pinery; March 25, one was captured at the edge of a palmetto pinery, and on the 26th one in an open field a mile or more from the nearest pines. These last were probably migrants, as both were found in localities which had before been thoroughly searched.

102. **Melospiza fasciata.** SONG SPARROW. — Common in thickets everywhere. Last noted March 31.

103. **Melospiza georgiana.** SWAMP SPARROW. — Few were found in low or swampy ground, but in certain old fields they were very abundant. Two seen April 27 were the last noted.

104. **Pipilo erythrophthalmus.** TOWHEE. — Abundant up to the date of its departure, April 27.

104 *a*. **Pipilo erythrophthalmus alleni.** WHITE-EYED TOWHEE. 'JOREE. — Common. Not found associated with the preceding, which inhabit thickets in or near hummocks, while *alleni* prefers the dense growths o scrub palmetto in the pineries. The difference in their calls is marked, and the familiar *chewink* of *erythrophthalmus* is easily distinguished from the clear, whistled, *cherwee* of *alleni*, which gives it its local name of 'Joree.'

105. **Cardinalis cardinalis.** CARDINAL. — Abundant. The first song was heard January 17, and on February 1, they were in full song. April 17, a completed nest was found, and May 27, young just from the nest were taken.

106. **Passerina cyanea.** INDIGO BUNTING. — A female, captured January 27, was the only one observed.

107. **Piranga rubra.** SUMMER TANAGER. — Males in full song arrived

*Maynard, American Exchange and Mart and Household Journal, Vol. III, No. 6, Feb. 5, 1887, p. 69.

April 14, females two days later, and after this date they were common in pairs, not inhabiting pine lands exclusively, but being equally common in dense scrubs.

An adult male, taken April 15, has appearing from the left side of the pygostyle, in addition to the eleven fully formed rectrices, three new and growing feathers, measuring 1.54 inches in length, of a pale tawny color, thus differing from those of either normal male or female.

In a female taken April 20, there is a peculiar blending of the color of both sexes, the red of the male predominating, which gives it a unique rosy appearance.

108. **Progne subis.** PURPLE MARTIN. — A common summer resident, breeding where boxes and gourds are erected for its occupation. Arrived March 3.

109. **Tachycineta bicolor.** TREE SWALLOW.—Abundant up to the date of its departure, May 6.

110. **Ampelis cedrorum.** CEDAR WAXWING.—Common but irregular winter visitant in flocks of ten to twenty. None were observed after April 28.

111. **Lanius ludovicianus.** LOGGERHEAD SHRIKE. 'LOGGERHEAD.'—Common, particularly in the town. Young were seen from April 7 to May 12.

112. **Vireo olivaceus.** RED-EYED VIREO.—A common summer resident. Arrived April 4.

113. **Vireo flavifrons.** YELLOW-THROATED VIREO.—Not uncommon summer resident. Arrived April 6.

114. **Vireo solitarius.** BLUE-HEADED VIREO.—Not uncommon.

114 *a*. **Vireo solitarius alticola.** MOUNTAIN SOLITARY VIREO.—Four of the ten Solitary Vireos taken during the winter and spring of 1886-87, prove to be this race, their identity being determined by Mr. Brewster, to whom they were submitted for examination. Eight additional specimens secured the following year are true *solitarius*.

115. **Vireo noveboracensis.** WHITE-EYED VIREO.—Probably a common winter resident, although few were seen until January 31, when they announced their presence from the depths of dense thickets where, silent, they would have been passed unnoticed.

116. **Mniotilta varia.** BLACK-AND-WHITE WARBLER.— A rare winter resident, becoming common March 15, and was last noted April 20.

117. **Protonotaria citrea.** PROTHONOTARY WARBLER. — Two males, taken April 5, were the only ones observed.

118. **Helmitherus vermivorus.** WORM-EATING WARBLER.— A single male was taken April 11, and a female December 26, 1887.

119. **Helminthophila celata.** ORANGE-CROWNED WARBLER. — A not uncommon winter resident. None were observed after April 11.

120. **Compsothlypis americana.** PARULA WARBLER.— Commenced to arrive February 22, was abundant on the 25th, and common at the date of my departure.

121. **Dendroica tigrina.** CAPE MAY WARBLER. — A male was taken April 14.

122. **Dendroica cærulescens.** BLACK-THROATED BLUE WARBLER.—April 5, two males, April 20 and 26, a male each day, May 6, two females, were the entire number observed.

123. **Dendroica coronata.** MYRTLE WARBLER.—The most abundant bird of any species, and very generally distributed. Fully nine tenths of their numbers departed after a severe northeast storm on April 8 and 9.

124. **Dendroica striata.** BLACKPOLL WARBLER.—April 23 and 26, a male each day, May 9, two males and a female, constitute the entire record.

125. **Dendroica dominica.** YELLOW-THROATED WARBLER.—Rather rare winter resident. March 2, migrants in full song began to arrive, and on the 4th of that month they were abundant in the cypresses and common in the pines near water. After this there was little or no change in their numbers or distribution. A partly formed egg was found in the oviduct of a female taken April 14. Several birds in my series of thirty-two are *albilora* so far as measurements are concerned, but none are without at least a trace of yellow over the eye.

126. **Dendroica vigorsii.** PINE WARBLER.—An abundant resident of the pineries, in full song February 1, and frequently heard before that date. Young, about two days from the nest, were taken April 18.

127. **Dendroica palmarum.** PALM WARBLER.—Abundant and very generally distributed; numbers appearing in the streets and gardens of the town, reminding one of Chipping Sparrows as they hopped around our doors and piazzas. They commenced to moult about March 15, and had not acquired their new plumage at the time of their departure, April 29, up to which date they were common.

127 *a*. **Dendroica palmarum hypochrysea.** YELLOW PALM WARBLER.—Occasionally found associated with the last, in all about fifteen individuals being noticed.

128. **Dendroica discolor.** PRAIRIE WARBLER.—Arrived March 31, became common April 5, and remained common until May 5, after which date none were observed.

129. **Seiurus aurocapillus.** OVENBIRD.—A not uncommon inhabitant of the hummocks.

130. **Seiurus motacilla.** LOUISIANA WATER-THRUSH.—Arrived March 8. Very few were seen.

131. **Geothlypis trichas.** MARYLAND YELLOWTHROAT.—Common.

132. **Sylvania mitrata.** HOODED WARBLER.—April 2 and 11, a male observed each day.

133. **Setophaga ruticilla.** AMERICAN REDSTART.—April 7 to May 9, six males, and on the last date three females, were the entire number seen.

134. **Anthus pensilvanicus.** AMERICAN PIPIT.—Abundant in flocks of twenty to fifty, frequenting the shores of the lake, hummock clearings, and freshly plowed ground.

135. **Mimus polyglottos.** MOCKINGBIRD.—Abundant everywhere. The birds of the town commenced to sing January 26, and were in full song February 3, while those of the surrounding country were not in full song

until March 7. The same difference was noticed in the times of breeding, my first notes on the subject being April 20, when almost fully grown young were seen in the city and a nest containing one egg was found a few miles out in the country.

136. **Galeoscoptes carolinensis.** CATBIRD. — Common, but silent and retiring. None were observed after May 10.

137. **Harporhyncus rufus.** BROWN THRASHER. 'THRASHER.' — A common resident. The first song was heard February 8.

138. **Thryothorus ludovicianus.** CAROLINA WREN. — Abundant. A single specimen (No. 1111, ♀, Dec. 13, 1887) in my series of eleven birds has faint wavy marks upon the flanks, thus approaching the *berlandieri* form.

139. **Troglodytes aëdon.** HOUSE WREN.—Abundant, both in the town and surrounding country, wherever there is sufficient growth to afford it concealment. Singing was commenced March 20, and none were observed after April 15.

140. **Sitta carolinensis.** WHITE-BREASTED NUTHATCH. — A not uncommon resident of the pineries.

141. **Sitta pusilla.** BROWN-HEADED NUTHATCH. — Common in small troops in the pines. One of three fully grown young, taken May 5, exhibits rather peculiar albinistic markings, the bill, head, and tertiaries being whitish, the toe nails flesh color.

142. **Parus bicolor.** TUFTED TITMOUSE.—Abundant. Young attended by the parents were taken May 27.

143. **Parus carolinensis.** CAROLINA CHICKADEE. — On two occasions single birds of this species were seen with flocks of *Sitta pusilla* in the pines, but with these exceptions it was a bird of low swamps and scrubs, frequently associating with the preceding. A partly formed egg was found in the oviduct of a female taken March 15.

144. **Regulus calendula.** RUBY-CROWNED KINGLET. — Abundant. In full song from March 15 to the date of its departure, April 16.

145. **Polioptila cærulea** BLUE-GRAY GNATCATCHER. — A rare winter resident, becoming common March 8. The first song was heard February 28.

146. **Turdus aliciæ.** GRAY-CHEEKED THRUSH. — A male was taken April 26.

147. **Turdus aonalaschkæ pallasii.** HERMIT THRUSH. — Abundant in the hummocks and common in the pineries. Several were heard singing January 8, and from March 10 to 26, they sang occasionally. Few were noted after the last named date until the time of their final departure, April 15.

148. **Merula migratoria.** AMERICAN ROBIN.—Abundant in large flocks, and in full song until December 31, no songs being heard later. The greater portion of their number had departed March 15, but several birds were seen in April, on the 11th, 21st and 27th, one observed each day.

149. **Sialia sialis.** BLUEBIRD.—Resident birds inhabit the pineries, while the large flocks of wanderers were probably winter visitants. Young just from the nest were taken April 20.

GREAT AUK NOTES.

BY FREDERIC A. LUCAS.

ORNITHOLOGISTS owe a debt of gratitude to Professor Newton and Mr. Grieve for their contributions to the history of the Great Auk, and for their labors in collecting and rendering accessible to English and American readers the substance of many scattered papers by foreign writers. Well as their work has been done a few errors, here and there, have crept in, and in correcting them, as they come up in connection with some of the points herein discussed, the writer trusts that he may not seem ungracious, for few have probably studied the writings of the above-named gentlemen with more pleasure and profit than himself.

To Professor Newton belongs the credit of calling attention to the fact that the range of the Great Auk was much more restricted than was generally supposed, and that the bird never even visited many of the localities in which it was once thought to have bred.

It is my own belief that, in historic times at least, the number of places resorted to by the Great Auk for breeding purposes was comparatively small, partly from the inability of the bird to fly, but more from one of those unknown reasons which impel some animals to select for their homes only one or two out of many possible sites.

We have a striking example of this in the Gannet, a bird whose powers of flight are exceptionally great, and whose considerable size and voracious appetite demand an abundant supply of fish. It might therefore be supposed that this bird would be found breeding at many places from Maine to Labrador, and yet, so far as I am aware, it is found at only two spots in all this range of coast, and to one of these we know certainly that it has resorted for three hundred and fifty years* in spite of almost ceaseless persecution.

If then such is the case with a bird gifted with unusual powers of locomotion how much more likely it is to have been the habit

*In 'The Auk' for April, by an unfortunate slip of the pen, I wrote three hundred and thirty-two instead of three hundred and fifty-three.

of a bird so hampered by nature as the Great Auk. It is also worthy of note that traditions concerning the Great Auk refer to a small number of localities only, and moreover had the bird availed itself of the many possible breeding places along the coasts of Newfoundland and Labrador it might have endured in lessened numbers until this day.

There is a rumor that twenty years ago the Great Auk was still to be found on the Penguin Islands, in the mouth of Gros Water Bay, sixteen miles from Grady Harbor, a locality about two hundred and fifty miles north of Cape Norman, N. F.* Of course this is possible, but it seems hardly probable.

It was on the program, during the cruise of the Fish Commission schooner 'Grampus,' in the summer of 1887 (a cruise in which it was my good fortune to take part), to visit as many of the probable former breeding grounds of the Great Auk as circumstances would admit of, notably Penguin Island near Cape la Hune (southern coast of Newfoundland), and Penguin Islands near Cape Freels (eastern coast). Unfortunately Æolus decided against a visit to the former locality — so often mentioned by the early navigators — and let loose upon us a brisk southwester, before which the 'Grampus' drove by under shortened canvas at the rate of ten knots an hour, while, with a visit to Funk Island still in prospect, it was deemed inadvisable to lose any time by waiting for wind and sea to go down.

On the eastern coast we were favored with better weather, and leaving the well-named harbor of Seldom Come By early in the morning, with a 'Newfoundland Pilot' (a lookout at the masthead) to guard against the possible contingency of a rock not laid down on the chart, passed Peckford Reef, the Schoolmarm, and Scrub Rocks, and came to anchor about noon off the Penguin Islands, two flat, grassy islets rising but twenty feet above the water and not at all suggestive of an Alcine breeding place.

Still one of these *may* be that certain flat island whence men "drave the Penguins on a board into their boats by hundreds at a time," in spite of the fact that the islets are but three miles from shore, and in consequence the Great Auk must have led a very precarious existence.

Offer Wadham, nine miles farther out to sea, is much more

*For this report I am indebted to Mr. William Sclater of St. Johns, N. F.

likely to have been the spot alluded to by Captain Richard Whitbourne, although all attempts to definitely locate it must necessarily be pure guess work.

Certainly if the Garefowl dwelt here, he left no trace of former residence, for not a bone nor a speck of eggshell came to light in making a dozen excavations to the bed rock.

This is in marked contrast to the state of affairs at Funk Island, where bones can readily be found, and where the soil itself, thickly sprinkled with crumbled eggshells, bears mute testimony to long years of occupancy by the Great Auk.

The soil of Funk Island, by the way, is frozen for only a part of the year, and the statement that a mummy of the Greak Auk was taken "from under ice which never melts" was doubtless made from a misapprehension of the facts in the case, for although floe ice is driven upon some portions of the island it never reaches those places where the Auk remains lie buried, and never endures into the summer months.

Today Penguin Islands are overun by a colony of field mice (*Arvicola riparia*), whose burrows exist in almost incredible numbers, while their well worn connecting paths cover the ground in places with a veritable net work. Sundry boluses of matted fur and bones bore witness to the occasional disturbance of this populous mousery by the visits of Owls.

A little investigation showed that many burrows, having been deserted by their original occupants, the mice, had been taken possession of by Leach's Petrels, and the occurrence of perfectly fresh eggs on the 24th of July, coupled with the fact that well advanced embryos were found at the Bird Rocks on July 9, suggests that possibly this little bird raises two broods in a season.

A few Puffins were also found on the island, but none of the many busy little excavators seemed to have met with better success than ourselves in finding bones, for none lay scattered about the entrance to their burrows (as was the case at Funk Island), and if indications may be relied on the former occurrence of the Great Auk on these Penguin Islands in any considerable numbers must be looked upon as somewhat doubtful.

Another doubtful habitat is found in the Bird Rocks of the Gulf of St. Lawrence, for although the Auks may have strayed thither from the colony at Penguin Island, off Cape la Hune, they

would have found the area available for breeding purposes limited to a narrow strip on the northeastern point of the North Rock, and a still more restricted portion on its southern side, these being the only spots accessible to a flightless bird like the Garefowl.

True, in Hakluyt's 'Voyages' Cartier speaks of the Great Apponatz in connection with the Iles des Margaulx, as he called these rocky islets, but may this not be a mistranslation of *grasse* Apponatz, or a correct translation of a misprint? Never having seen the original French, I make this suggestion with some hesitation, and it must stand for what it is worth, still it derives a little support from the circumstance that where these problematical birds are first mentioned they are spoken of as being "exceeding fat" (Il y sont excessivement gras").

Mr. Grieve suggests in a recent letter that in former times the space at the base of the little rock was much more extended than at present, since Cartier's crew "killed above a thousand of those Godetz and Apponatz" on "the lowest part of the least island," and "in less than one hour might have filled thirty such boats of them."

This supposition may very well be correct, yet careful observation of the little rock and the depth of water immediately about it leads me to think that the changes it may have undergone have been the result of the fall of fragments from the overhanging sides rather than the wearing away of its base.

Charles Leigh, who visited the Bird Rocks in 1538, does not mention the 'Penguin,' although he landed on the little rock after a skirmish with a herd of Walruses who valiantly attacked the boat and at first put the invaders to flight.

If the Godetz and Apponatz were Murres and Razorbills it would not have required a very great expanse of cliff to have furnished foothold for a thousand or two of them, and even now, after long years of persecution, it is quite possible to approach these birds, when sitting on their eggs, sufficiently near to knock them down with a stick.

That the Iles des Margaulx of Cartier are the Bird Rocks of today can scarcely be questioned, although no locality whatever can be found by following the courses and distances given as having been sailed on the 24th and 25th of June, 1534.

But by following Cartier from Buona Vista northward,

through the Strait of Belle Isle, and thence southward, we learn from the latitudes now and then given that on June 25 he must have been somewhere in the vicinity of the Bird Rocks.

Fortunately, too, there is a reference to the Island of Brion, giving its direction and distance from the Iles des Margaulx, which is alone sufficient to identify the spot, as they harmonize with existing facts. Brion Island, like Blanc Sablon and Chateau Bay, has retained its name unchanged while so many others have either been renamed or have had their original appellation so anglicized as to be quite unrecognizable.

Final confirmation of the locality is found in the Gannets (Margaulx) themselves, whose descendants with true conservative spirit still cling to their historic stronghold, and although they no longer exist in such numbers that the rocks "though red seem white," they still bite as savagely as in the days of yore.

Two more supposed breeding places of the Great Auk may be considered here, Cape Cod and the Virgin Rocks. Of the latter it will suffice to say that they lie three and one half fathoms under water, while many evident reasons, such as the low, sandy character of Cape Cod and the adjacent islands, the proximity of Indians, and the general northern range of the Alcidæ on the Atlantic coast, render the former locality more than doubtful.

As for the bones found in shell heaps, they are probably those of birds taken during their migrations southward, for the Great Auk was doubtless formerly as common on the New England coast during the autumn and winter months as the Razorbill is now.

A word regarding the food of the Great Auk, and in support of the statement made by Fabricius that the lump-fish (*Cyclopterus lumpus*) formed an important item in its bill of fare. While the lump-fish is rather rough to look upon, the bones are extremely brittle, and the strong beak of the Garefowl would slice through the body of any specimen it might have captured, as easily as the knife of the Eskimo does through the body of the lump-fish he dries or freezes for his winter store. The young lump-fish—and these would be most dainty morsels—keep near the surface of the water and seek concealment in patches of floating rock-weed where they would easily have been detected by the keen eye of a sea fowl, while being but indifferent swimmers there would be no safety in flight.

This calls to mind the somewhat singular remark of Mr. Reeks

that the Great Auk could not have been a powerful swimmer, owing to the small size of its feet, forgetting that, like the Penguins and the Alcidæ, the Garefowl depended for swimming chiefly upon the wings, and if the bird could not fly over the water it certainly could beneath.

I cannot close this paper without referring to the published figures of the Great Auk, for this bird has suffered grievously at the hands of nearly every artist (Audubon is an exception) who has been called upon to portray it.

It is true that the artists may plead extenuating circumstances in the shape of the stuffed—it were flattery to say mounted—specimens that have served as models, most of which are from two to eight inches longer than they should be. I trust that Mr. Hancock will pardon me for including his figure in this criticism, for his bird is too long, too slender, and with too pronounced a crop.

Artists have evidently recognized the fact that the stuffed Auks are too slender, and endeavored to make amends for the shortcomings of the taxidermist, for obesity is the general trouble with figures of the Great Auk, although the neck is usually as much too thin as the body is too stout. Could the bird have seen himself portrayed as he is even on the cover of his namesake, he might, like Wolfe, have exclaimed, "now I die content."

The question might naturally be asked what right has one who never saw the Great Auk alive to criticise him dead, and the answer is this, having just compared three mounted skeletons with one of the Razorbill the conclusion is unavoidable that the two species resembled one another very closely in outward contour.

As for internal structure, I must plead guilty to a belief that the two species should be included in the genus *Alca*, and with this bit of cis-Atlantic heresy bring these notes to a close.

DESCRIPTIONS OF TWO NEW SUBSPECIES OF THE SEASIDE SPARROW (*AMMODRAMUS MARITIMUS*).

BY J. A. ALLEN.

MR. W. E. D. SCOTT, of Tarpon Springs, Florida, sent to me recently for examination an interesting series of Seaside and Sharp-tailed Sparrows, taken at Tarpon Springs, Feb. 28, 1888. The Sharp-tailed Sparrows, six in number, differ very appreciably from New Jersey and Long Island specimens, being smaller, and having the streaks on the breast heavier and more sharply defined, but they are perhaps hardly different enough from the northern birds to require recognition by name.

The two Seaside Sparrows are intermediate between *Ammodramus maritimus* and *A. nigrescens*, but approach the latter more nearly than the former. They suggest that material from other points may eventually bridge the gap between these two forms, and that *A. nigrescens* will prove to be merely a subspecies of *A. maritimus*, as it was originally described by Mr. Ridgway. For the present the Tarpon Springs birds may be recognized as

Ammodramus maritimus peninsulæ, subsp. nov. SCOTT'S SEASIDE SPARROW.

SUBSP. CHAR. — *Adult* ♀ (Tarpon Springs, Fla., Feb. 28, 1888; W. E. D. Scott): — Similar to *A. nigrescens* in size and proportions, and in the size and form of the bill. Above the feathers are centrally dull brownish, edged broadly with olive and gray. Below with narrow black streaks on the breast and flanks, much narrower and less sharply defined than in *A. nigrescens*, but much stronger and much more sharply defined than in *A. maritimus* in any phase of plumage. Throat and abdominal region white; rest of underparts suffused with brownish ash, streaked with blackish. Wing, 2.20; tail, 2.00; tarsus, .83; culmen, from base .52.

Types, No. 31,209 and 31,210, females, Am. Mus. Nat. Hist., New York City, [and No. 2600, ♂, Coll. A. K. Fisher].

HABITAT.—Southwestern Florida (Tarpon Springs and Cedar Keys), [and Louisiana (Grand Isle)].

Through the kindness of Mr. William Brewster I have been able to compare the birds from Tarpon Springs with his large

series of *A. nigrescens* from Indian River. I find also in Mr. George B. Sennett's collection a specimen collected many years since at Cedar Keys in November which is practically identical with the Tarpon birds.

Some April examples of *A. nigrescens* approach var. *peninsulæ* in having the black of the upper parts, particularly of the head, hind-neck, and fore-back, edged with olive and gray; but beneath the broad black streaks contrast strongly with the narrower and less sharply outlined streaks of *peninsulæ*.

In *A. maritimus*, in breeding dress, the breast and sides are ashy with obscure plumbeous centres, rarely showing a tendency to well-defined streaks. In autumn, however, the dark centres take more the form of streaks. From *maritimus*, in all stages of plumage, *peninsulæ* differs by its much smaller size, much darker upper parts, decided streaks below, darker flanks, and whiter throat and abdomen.

I am indebted to Mr. Scott for generously placing this interesting material in my hands for description.

Since the above was put in type I have received from my friend, Dr. A. K. Fisher, of Washington, D. C., sixteen specimens of Seaside Sparrows collected by him at Grand Isle, Louisiana, June 6-9, 1886. Ten of them are adults in rather worn plumage and six are in first plumage. These specimens prove of great interest, considered in connection with still other material now to be mentioned.

Three of the Louisiana specimens (No. 2600, 2622, and 2624, Coll. Dr. A. K. Fisher) are practically identical, considering the difference in season, with the birds from Tarpon Springs and Cedar Keys. In the others the plumage is more worn (in some of them exceedingly abraded), and the streaks below are either much less distinct or quite wanting. All agree in small size and dark colors, in this respect differing strikingly from true *maritimus*, and agreeing with the Florida birds. The Louisiana birds in first plumage differ rather more from northern birds in corresponding plumage than do the adults. (See the comparative descriptions of the young given below.) The average difference in size is about one fourth of an inch in the length of the wing, the wing in northern birds averaging about 2.50 and in the southern about 2.25.

In this connection it seemed of interest to compare with the Louisiana and Florida birds a small series in Mr. George B. Sennett's collection, taken by him in the breeding season at Corpus Christi, Texas, May 25, 1882. Mr. Sennett has, on different occasions, called my attention to the differences between these birds and true *maritimus*, but the material representing this group of birds then available was much less than at present, and with his characteristic conservatism in such matters he deferred describing the Texas birds till their status could be better determined. He now kindly permits me to make use of this material, consisting of three specimens in breeding plumage and one in first plumage. The Texas form being evidently entitled to recognition, it gives me pleasure to name it in honor of one who is doing so much to extend our knowledge of Texan ornithology.

Ammodramus maritimus sennetti, subsp. nov. TEXAN SEASIDE SPARROW.

SUBSP. CHAR. *Male and female adult* (Corpus Christi, Texas; Coll. G. B. Sennett):—Size of *Ammodramus maritimus nigrescens* and *A. m. peninsulæ*. Above similar to *A. maritimus*, but all the colors are lighter and paler; nape distinctly streaked with black,—a feature absent in *maritimus* and only occasionally indicated in *peninsulæ*. Below the prevailing shade of gray is much lighter than in *maritimus*, with distinct, narrow, blackish streaks on the breast and flanks, those on the breast bordered with white or ochraceous white; white of throat and abdomen also purer than in *maritimus*.

Types, No. 3304, ♂, and No. 3303, ♀, Coll. G. B. Sennett.

HABITAT.—Gulf coast of Texas (Corpus Christi).

I have before me the young in first plumage of *A. maritimus*, *A. m. peninsulæ*, and *A. m. sennetti*, in which the differences are even more strongly pronounced than in the adults, as shown in the following comparative descriptions.

A. maritimus. *Juv. in first plumage*:—Prevailing color above olive brown streaked with black, narrowly on head, nape, lower back, and rump, broadly on interscapulars. Below, throat and abdomen soiled white; sides, of neck, jugulum and flanks pale buffy, narrowly streaked with black. (Five specimens, Long Island, N. Y.)

A. m. peninsulæ. *Juv. in first plumage*:—Prevailing color above black, the feathers narrowly edged with ochraceous. Below, throat and middle of abdomen white; sides of neck, jugulum, and flanks bright ochraceous, narrowly streaked with black. (Six specimens, Grand Isle, La.)

A. m. sennetti. *Juv. in first plumage:*—Prevailing color above gray-brown, streaked with black, broadly so on the interscapulum. Below pale fulvous white, strongest on sides of neck, jugulum, and flanks, where also sparsely streaked with black. (One specimen, No. 4956, Coll. G. B. Sennett—Corpus Christi, Texas, June 14, 1887.)

The name *peninsulæ* was given to Scott's Seaside Sparrow before the Louisiana material came to hand. The name is thus not happily chosen, as the form is doubtless locally common along not only the Gulf coast of Florida, but westward at least to Western Louisiana.

DESCRIPTION OF A NEW SPECIES OF THE GENUS *TITYRA*, FROM ECUADOR.

BY J. A. ALLEN.

A SMALL collection of birds, collected mainly in the vicinity of Quito, Ecuador, was recently purchased of Mr. Ludovic Söderström by the American Museum of Natural History. It contains a number of rare species, and others of special interest for the locality of their capture; an annotated list of the collection will be given later in another connection. It contained four specimens of *Tityra*, two of which are referable to *T. personata;* one of these has much more than the usual amount of white in the tail—thus approaching *T. semifasciata*—and the other very much less than the normal amount. One of the other specimens I refer with hesitation to *T. albitorques*, from which it differs in the small amount of white at the base of the tail, there being little more than is seen in *T. inquisitrix*. This specimen thus has the head-markings of *T. albitorques* and nearly the tail of *T. inquisitrix*. The fourth specimen is so different from any of the described species of this genus that I venture to characterize it as new.

Tityra nigriceps, sp. nov.

SP. CHAR. *Adult* ♂:—Similar to *T. personata*, but with the whole head and throat black, and the white at the base of the tail restricted to the extreme base of the feathers, which are merely white centrally for

about an inch, both vanes being widely bordered with black externally. The whole plumage, both above and below, excepting of course the black of wings and tail, is much lighter—almost pure white—than in examples of *T. personata* from other localities. Size of *T. personata*.

Type, No. 30,489, Am. Mus. Nat. Hist., New York City.

HABITAT. Headwaters of the Napo, Ecuador.

In *T. personata*, the only species with which this need be compared, the black of the head is restricted to the chin, the malar region, the anterior half of the ear-coverts, and a broad band behind and above the eyes, joining the black of the front of the head, which extends from the base of the bill to a line about opposite to the middle of the orbits. In *T. nigriceps* the black covers the whole throat and head, extending to the nape, and including the whole of the auricular region. The nape is also black, with the feathers in part edged with white. The black of the head is thus quite as extended as in *T. cayana*, with the addition of a *wholly black throat*.

The material examined in this connection numbers 112 specimens, representing, in good series, all the known species of the genus. In this connection I desire to acknowledge my indebtedness to the kind offices of Mr. Robert Ridgway in sending me for examination the specimens of *Tityra* contained in the U. S. National Museum.

THE JACANIDÆ.

BY D. G. ELLIOT, F. R. S. E.

MY material for this review has been obtained from the following sources. The Jacanidæ in the general collection of the American Museum of Natural History, New York, specimens from the Lawrence collection and those of Messrs. Smith and Rusby, also in the Museum. From Boston I have received specimens from the Boston Society of Natural History, and Mr. C. B. Cory; and also all the specimens in the National Museum at Washington, amounting altogether to about one hundred examples, quite

sufficient to enable satisfactory conclusions to be reached. I would express my thanks to Messrs. Henshaw and Cory and Professors Goode and Ridgway, for the assistance given.

The following are the chief points in the literature of the family:

1758. LINNÆUS, *Systema Naturæ*. In the genus *Fulica*, comprising species of various genera, the Jacana from Carthagena, without pendent wattles, and tri-lobed frontal wattles, is named *Fulica spinosa*. . . . . Species 1.

1766. LINNÆUS, *Systema Naturæ, 12th ed.* In the genus *Parra* two Jacanas are described, the bird from Brazil as *P. jacana*, and *P. variabilis* (= *P. spinosa*). . . . Species 2.

1786. SCOPOLI, *Deliciæ Floræ et Faunæ Insubricæ*. Under the genus *Tringa* a Jacana is described as *T. chirurgus*. Species 3.

1788. GMELIN, *Systema Naturæ*. Eight species of Jacana are here given under *Parra*, two for the first time, viz., *P. nigra* and *P. africana*. The others are *P. jacana* Linn., *P. brasiliensis* and *P. viridis* (= *P. nigra*), *P. variabilis* (= *P. spinosa* Linn.), *P. luzoniensis*, and *P. sinensis* (= *T. chirurgus* Scop.) . . . . . Species 5.

1790. LATHAM, *Index Ornithologicus*. The list of *Parra* here given is but a repetition of that of Gmelin, except that one species, *P. indica*, is described for the first time. . Species 6.

1817. VIEILLOT, *Nouveau Dictionnaire d' Histoire Naturelle*. The list of *Parra* of this author is the same as those of Gmelin and Latham, save that he renames the *P. indica*, *P. cristata*.

1820-1839. TEMMINCK, *Planche Coloriées*. One new species is here described as *P. gallinaceus*. . . . . Species 7.

1832. GEOFF. ST. HILAIRE, *in Magazin de Zoologie*. *Parra albinucha* is first described. . . . . Species 8.

1832. LESSON, *Traité Ornithologie*. *J. spinosa* is renamed *P. cordifera*.

1832. WAGLER, *Isis*. In this publication *J. spinosa* is renamed *P. gymnostoma*, and three genera are proposed for these birds: *Hydrophasianus* for *P. chirurgus* Scop.; *Metopidius*, containing *P. africana* and *P. ænea* (= *P. indica* Lath.). (As the first named has the front and top of head bare and no wattle, it cannot be classed in the same genus with *P. indica* which

has a feathered head, and a broad, upright, frontal wattle); and *Hydralector*, for *P. gallinaceus* Temm.

1844-1849. G. R. GRAY, *Genera of Birds*. In this work we have the Jacanas placed in the subfamily Parrinæ of the family Palamedeidæ, order Grallæ. Fourteen species are enumerated under *Parra*, of which four are marked doubtful, and one is given for the first time, *P. hypomelæna* (= *P. nigra* Gmel.). One of the species is marked with a ?—The species given besides these are *P. jacana* Linn., *P. viridis* and *P. brasiliensis* Gmel. (= *P. nigra* Gmel.), *P. gymnostoma* Wagl. and *P. cordifera* Less. (both = *P. spinosa* Linn.), *P. africana* Gmel., *P. capensis* Smith, *P. albinucha* St. Hil., *P. indica* Lath., *P. cristata* Vieill.) = *P. indica* Lath.), *P. gallinacea* Temm., and *P. chilensis* Molina, which belongs to the genus *Vanellus* auct.

1849. SIR A. SMITH, *Illustrations of the Zoology of South Africa. Aves. P. capensis* first described. .. . Species 9.

1856. P. L. SCLATER, in *Proceedings of the Zoological Society of London*. A review of the American species of this family is here given. Five are enumerated—*P. jacana* Linn., *P. intermedia* Bonap. (= *P. jacana* Linn.), *P. melanopygia* Sclat. and *P. hypomelæna* Gray (both = *P. nigra* Gmel.), and *P. gymnostoma* Wagl. (= *P. spinosa* Linn.).

1878. RAMSAY, *Transactions Linnean Society of New South Wales*. *Hydralector gallinaceus*, described as *Parra novæguineæ*.

1881. C. B. CORY, in *Bulletin Nuttall Ornithological Club*. *J. spinosa* from Haiti described as *P. violacea*.

CLASSIFICATION.

Formerly the Jacanidæ were usually associated with the Rallidæ, but through the researches of competent comparative avian anatomists, notably the late Messrs. Garrod and Forbes, it has been pretty conclusively shown that the Jacanas are much more nearly related to the Plovers. Nitzsch in his 'Pterylography,' associates the *Jacanæ* with the genera *Rallus*, *Crex*, and *Porphyrio*, although they differ from all of these in having ten rectrices instead of twelve; while the bands of the dorsal tract behind the shoulder blades are narrowed remarkably, and the pelvic portion is dilated. The lumbar tracts are weak and united by sparse contour feathers to the uropygial portion of the dorsal

tract. The skulls of the Jacanidæ are schizorhinal, with well-developed basipterygoid processes; the vomer is apically emarginate; no trace of occipital fontanelles, and the supraorbital impressions are absent. The pelvis exhibits its Limicoline affinities by having the ilia wider, and more expanded anteriorly, by having hardly any median projection on the postacetabular ridge, and by being widest dorsally behind the antitrochanters. Between the ischia and sacrum the bony plates are narrower, and the posterior part of the renal fossæ more open. In certain species which have the metacarpal spur less developed and blunt, the radius for its distal half is dilated and flattened into a lamellar-like expansion. About half of this radius is bare of muscle, and the margin slightly roughened, and doubtless the bird is capable of striking a severe blow with this scimitar-shaped bone. In the species where the 'spur' is long and sharp, the radius is of the usual form. Viewed anatomically, the Jacanas possess no crop, but a muscular gizzard, the epithelium lining of which is hard and thick. The gall bladder is well developed; and the cœca are very small, their length to that of the intestines being 2 (*J. jacana*) and 15 in. (*H. chirurgus*) to 12 inches. It will thus be seen that in many particulars the Jacanidæ differ from the Rallidæ, and approach the Limicolæ; but they possess sufficient characteristics peculiar to themselves to constitute a distinct Family, with the Charadriidæ as its nearest relatives.

The Jacanas are characterized by narrow, rather long, pointed bills; the nostril oblong, lateral, open, placed about midway in the maxilla. Moderately long necks. Body small. Wings armed with a metacarpal spur, in some species well-developed and sharp, in others blunt, or rudimentary. Head usually adorned with a wattle of various shapes. Legs long and slender, toes enormously lengthened with extremely long claws, that on the hallux being often three times greater in length than the toe. With these large feet, their passage over floating plants and weeds is made expeditious and easy.

GENERA.

Fortunately but few generic terms have been applied to these birds, but the one not entitled to priority has been used by nearly all ornithological writers from the time of Linnæus to the present

day.* Brisson first instituted a genus '*Jacana*' for the Jacanas and gave very good descriptions of those he considered especially distinct. Six years after, Linnæus, in his 12th edition, utterly ignored Brisson's genus, as in fact he did his own previous writings, and bestowed the generic term *Parra* upon these birds, and this is the name that has, quite erroneously, been employed ever since. It must, however, give way to that of Brisson. The Jacanidæ are properly divided into five genera, characterised chiefly by the presence or absence of wattles, their shape, and the bare or feathered head.

List of Genera.

1760. *Jacana* BRISSON, Ornith. Vol. V, p. 121. Type, *Fulica spinosa* Linn.

1766. *Parra* LINNÆUS, Syst. Nat. Vol. I, p. 259 (*passim*). Type, *Parra jacana* Linn.

1832. *Hydrophasianus* WAGLER, Isis, p. 279. Type, *Tringa chirurgus* Scop.

1832. *Metopidius* WAGLER, Isis, p. 279. Type, *Parra africana* Gmel.

1832. *Hydralector* WAGLER, Isis, p. 279. Type, *Parra gallinaceus* Temm.

1842. *Diplopteryx* GLOGER, Handb. u. Hilfschb. Naturg. Type, *Tringa chirurgus* Scop.

1888. *Aphalus* ELLIOT, gen. nov. Type, *Parra capensis* Smith.

Key to the Genera and Species.

A. Tail short; primaries normal.
- *a*. Head with an upright fleshy wattle on forehead ..... JACANA.
  - *a'*. Narrow pendent wattles at base of mandible. Frontal wattle bi-lobed.
    - *a''*. Back and wings chestnut ..... *J. jacana*.
    - *b''*. Back and wings black, glossed with purple ..... *J. nigra*.
  - *b'*. Without pendent wattles.
    - *a''*. Frontal wattle tri-lobed. Back and wings purplish chestnut ..... *J. spinosa*.
    - *b''*. Frontal wattle rounded. Back and wings pale greenish bronze ..... *J. indica*.
- *b*. No wattles.
  - *a'*. Forehead bare ..... METOPIDIUS.

* Stejneger; Auk, II, 1885, p. 338.

a''. Back of neck white, sides and front of neck black.....*M. albinucha*.
b''. Back of neck black, sides and front of neck white.....*M. africanus*.
c'. Forehead feathered.....APHALUS.
a''. Forehead yellow; crown and nape, reddish orange.....*A. capensis*.
d'. Head with fleshy shield and narrow upright fleshy membrane over culmen to nostrils. HYDRALECTOR.
a''. Nape and back of neck black; sides of face golden yellow.....*H. gallinaceus*.
B. Central tail-feathers very long; primaries attenuated.....HYDROPHASIANUS.
a. Head, face, and fore neck, white; nape and stripe on sides of neck, black; hind neck, golden yellow.....*H. chirurgus*.

GEOGRAPHICAL DISTRIBUTION.

The Jacanas are pretty well distributed throughout the globe, and are represented in all its various zoögeographical divisions. Commencing in the far East we find in the Australian Region that the continent of Australia possesses but one species, the *M. gallinaceus*, procured in South Australia, at Port Essington, in Queensland, and the north-eastern portion of New South Wales. This species extends its range into New Guinea and Mysol of the Papuan group of the Austro-Malayan Subregion, and is also found in the Austro-Malayan islands Celebes and Banda, though perhaps the latter may be doubtful. The Oriental Region contains two species, *H. chirurgus* and *M. indicus*, the range of which is very similar, extending through India, as understood, from Cashmere, through Cochin-China and Siam of the Indo-Chinese Subregion, into the Indo-Malay islands of Sumatra, Java and Borneo, and *H. chirurgus* is also found in the Philippines. Ceylon also contains both species, and Formosa of the Oriental Region possesses *H. chirurgus*. The Ethiopian Region contains three species, *M. africanus*, *M. albinucha*, and *A. capensis*. The first extends from Natal on the southeast coast, through the lake regions to Zanzibar on the north, and across the southern portion of the continent through Damara-Land to Senegal on the southwest coast. *A. capensis* is found from Algoa Bay, across the southern portion of Africa, into Damara-Land. Madagascar (Malayan Subregion) contains *M. africanus* and *M. albinucha*.

The Palæarctic Region possesses but one species, *H. chirurgus*, which is met with in the Chinese Empire, where, according to M. David, it passes the summer in the middle provinces. The Nearctic Region has but one species, *J. spinosa*, met with in various parts of the West Indian Islands, and extending southwards through Central America into Colombia of the Neotropical Region. This last region also contains *J. nigra*, which ranges through Central America and Colombia, and *J. jacana*, which is distributed generally over a large portion of South America, being abundant in Trinidad, Venezuela, Brazil, the Argentine Republic, Peru, and Bolivia.

Jacana jacana.

Parra jacana LINN. Syst. Nat. 1766, I, p. 259.—BUFF. Pl. Enl. 322.—GMEL. Syst. Nat. 1788, I, p. 707.—VIEILL. Ency. Méth. 1823, III, p. 1053, pl. 60, fig. 1.—SHAW, Gen. Zool. 1824, desc. and syn. *partim*, *nec.* pl.—LATH. Ind. Orn. 1790, II, p. 762.—SCLAT. P. Z. S. 1856, p. 282, *partim*.—TAYL. Ibis, 1864, p. 96.—LÉOT. Ois. Trinid. 1866, p. 486.—NITZSCH, Pteryl. 1867, p. 126.—PELZ. Ornith. Bras. 1870, p. 313.—SCLAT. & SALV. P. Z. S. 1873, p. 309.—LAYD. Ibis, 1873, p. 396.—HUDS. P. Z. S. 1876, p. 103.—TACZ. P. Z. S. 1877, p. 329. DURNF. Ibis, 1877, p. 196.—FORBES, P. Z. S. 1881, pp. 642-647; *ib.* Ibis, 1881, p. 359.—WHITE, P. Z. S. 1882, p. 627.—BERL. Ibis, 1884, p. 440.—TACZ. Ois. Per. III, p. 331, *partim*.

Parra intermedia SCLAT. P. Z. S. 1856, p. 282 (ex Venezuela, Verr.).

Jacana spinosa STEJN. Auk, 1885, p. 338.

Adult:—Head, neck, and anterior portion of back black with green and purple reflections. Back and wings bright chestnut. Primaries and secondaries pale greenish yellow, the latter tipped with brown; the former bordered with the same color, confined to the apical half of the outer web, and the typical portion of the inner except on the first primary, which has the entire outer web brown. Flanks dark chestnut; breast dull greenish black. Abdomen and under tail-coverts dull purplish. Rump and upper tail-coverts, purplish chestnut. Tail bright chestnut tipped with black. Frontal and side wattles, together with base of bill, bright red. Remainder of bill yellow. Legs and feet olive. Metacarpal spur extremely sharp. Spurs on shoulder of wing yellow. Total length, 10½; wing, 5½; tail, 2½; bill (culmen), 1⅞ inches.

Young:—Top of head brown; a black stripe down back of neck, and one from behind the eye to nape, black. Superciliary stripe yellowish white. Throat, front of neck, and entire underparts white, washed on lower neck and upper part of breast with buff. Back bronzy brown; wings bronze-green with chestnut feathers interspersed, chiefly on the

shoulders and coverts. Primaries and secondaries as in the adults. Rump and upper tail-coverts chestnut. Tail bronzy brown. Frontal and side wattles rudimentary, red. Bill apparently bluish at base of maxilla, remainder yellow. Legs and feet olive. Total length, 9; wing, 5⅛; tail, 2¼; bill (culmen), 1¼ inches. Specimens vary in size.

HABITAT. Trinidad (Léotaud). Angostura, Venezuela (Umlauff). Parahyba, Brazil (Forbes). Pará (Leyard). Corumbá, Brazil (Smith). Argentine Republic (Hudson). Colombia (Wyatt). Quito, Conadon (Alexander). Peru (Jelski and Stolzmann, Bartlett). Yungas, Bolivia (Rusby).

Linnæus (l. c.) founded this species in 1766, upon the plate 357 in Edwards's drawings called by him, "the Spur-winged Water Hen of Brazil," and gave to it the name of *Parra jacana*, thus employing for his specific term, that of the genus given to these birds by Brisson six years previously, and substituting for that genus the new one *Parra*. The codes of the American and British Ornithologists' Unions have provided, more or less satisfactorily, rules to govern cases when specific names have been elevated to generic rank, and told us what is to be done with such *parvenues*; but neither of them have a word to say as to the proper course of procedure when generic terms are reduced to specific rank, and ornithological nomenclature becomes enriched by such an abominable instance of tautology as exhibited in the name which this, luckily wide-footed, bird is compelled to carry about. Brisson is an accepted authority for genera, and consequently *Jacana* must stand, but I employ Linnæus's specific name under protest, believing that he had no right to willfully ignore the works of previous authors, any more than have ornithologists of the present day, and I think that *jacana* should be rejected as a specific term, and another one substituted. I commend this case to the consideration of the two Unions aforesaid, in order that a similar occurrence may be rendered nugatory in the future, if a way can be found to make it so. Linnæus probably never saw a specimen of Jacana, his knowledge of these birds being confined mainly to Edwards's and Brisson's plates and descriptions, and consequently his description of *P. jacana* is very much mixed, and would seem to apply to two species—the *corpus* to *J. nigra* (*Jacana armata nigra* Briss.), the *dorso* to *J. jacana*.

Jacana nigra.

Parra nigra GMEL. Syst. Nat. 1788, I, p. 708.—LATH. Ind. Orn. 1790, II, p. 762.—VIEILL. Ency. Méth. 1823, III, p. 1054.

Parra brasiliensis GMEL. Syst. Nat. 1788, I, p. 708.—LATH. Ind. Orn. 1790, II, p. 763.—VIEILL. Ency. Méth. 1823, III, p. 1054.

Parra viridis GMEL. Syst. Nat. 1788, I, p. 708.—LATH. Ind. Orn. 1790, II, p. 763.—VIEILL. Ency. Méth. 1823, III, p. 1055.

Parra hypomelæna G. R. GRAY, Gen. B. 1846, III, pl.—SCLAT. P. Z. S. 1856, p. 283.—SCLAT. & SALV. P. Z. S. 1879, p. 346.

Parra melanopygia SCLAT. P. Z. S. 1856, p. 283.

Adult:—Entire plumage black glossed with green and purple, these hues varying in intensity and brightness among individuals, the purple being usually the most brilliant upon the wings and mantle. Under wing-coverts black. Tail purplish black. Remiges pale greenish yellow, tipped on secondaries, and bordered on primaries with brownish black, the outer web of first primary being entirely of this color. An upright broad wattle divided into two lobes at the base of maxilla, and two narrow, somewhat lengthened, one pendant from either side of base of mandible, bright orange red. Base of bill orange red, remainder bright yellow. Metacarpal spur developed and pointed. Tarsi and feet greenish black. Individuals of this species apparently vary considerably in size, even from the same locality, and also in the amount of purple reflections on the neck and body. Total length, 7¾–8¾; wing, 4¾–5; tail, 1¾–2; tarsus, 2–2¼; bill (culmen), ¾–1¼ inches.

Young:—Top of head brown. Superciliary stripe yellowish white. Stripe from behind the eye, back of neck, and anterior portion of back, rump, and upper tail-coverts black, with a greenish lustre. Throat, neck underneath, and entire underparts, white. Wings bronzy brown. Primaries and secondaries as in the adult. Tail bronzy purple. Bill: frontal wattle yellow; base of maxilla reddish, rest of bill yellow. Legs and feet olive. Total length, 9¼ in.; wing, 5¼; tail, 1¾; bill (culmen), 1¼.

HABITAT. Carthagena, Mus. Paris (Sclater). Antioquia, Colombia (Salmon). Baranquila, Colombia (Crowther). Panama (McClellan). St. Martha (Lawrence).

This apparently perfectly valid species, described by the older writers very completely, and named by Gmelin, seems either to have been overlooked by authors generally or else for some inexplicable reason deemed to be the same as the *P. jacana* of Linnæus, which it has nothing to do with, and in no way resembles. Gray figures it in his 'Genera of Birds' as *P. hypomelæna*, but gives no description, and places the *P. nigra* Gmel. in his list as a questionable species! Sclater [l.c.] gives it

another name, *P. melanopygia*, from Santa Martha, Colombia, separating it from both Gray's bird and *P. nigra* of Gmelin, which last he places as a synonym of *P. jacana* Linn., and so it has gone on among writers up to the present day. In no stage of its plumage can it be confounded with *P. jacana* Linn. I also am unable to perceive any difference in specimens from Santa Martha and those from other localities entitling them to separate specific rank, and have consequently placed *P. melanopygia* Sclater among the synonyms of *J. nigra*. Gmelin's description, *capite, collo, cauda et corpore supra nigro*, proves at once that he had not *jacana* in view, for this species has the tail and body above, bright purple chestnut, with the tips of the rectrices a greenish black. Gmelin's synonym is the *Jacana armata nigra* Brisson, Av. Vol. V, p. 124, No. 3, where an elaborate and complete description of *P. nigra* is given.

Jacana spinosa.

Fulica spinosa LINN. Syst. Nat. 1758, p. 152 (immature).

Parra variabilis LINN. Syst. Nat. 1766, p. 260 (imm.).—GMEL. Syst. Nat. 1788, I, p. 708. — LATH. Ind. Orn. 1790, II, p. 763. — VIEILL. Ency. Méth. 1823, p. 1055, pl. 60, No. 2.

Parra jacana SHAW (*nec.* LINN.), Gen. Zool. 1824, p. 263 (desc. and syn. *partim*), pl. 32.

Parra gymnostoma WAGL. Isis, 1832, p. 517.—GRAY, Gen. B. 1846, III, p. 589. — SCLAT. P. Z. S. 1856, p. 283, 1857, p. 206, 1858, p. 360, 1860, p. 393.— MOORE, P. Z. S. 1859, p. 64. — SCLAT. & SALV. Ibis, 1859, p. 231. — TAYLOR, Ibis, 1860, p. 314. — SCHLEG. Mus. Pays-B. Ralli, 1865, p. 66. —SALV. Ibis, 1870, p. 116. — WYATT, Ibis, 1871, pp. 116, 383. — MERRILL, Bull. Nutt. Orn. Club, 1876, I, p. 88. — FORBES, P. Z. S. 1881, pp. 642, 646.—SALV. P. Z. S. 1883, p. 428.—BAIRD, Br. & RIDG. W. B. N A. 1884, I, p. 176. — CORY, B. Hait. & San. D. 1885, p. 159, pl.—RIDG. Man. B. 1887, p. 183.

Parra cordifera LESS. Rev. Zool. 1824, p. 135.—DES MURS, Icog. Orn. p. 849, pl. 42.

Parra violacea CORY, Bull. Nutt. Orn. Club, 1881, VI, p. 130.

Adult:—Head, neck, upper part of back and breast, black, with green and purple reflections. Back and wings purplish chestnut. Rump, upper tail-coverts, and tail dark purple. Lower portion of breast and flanks dull maroon. Abdomen, thighs and under tail-coverts dull brownish maroon. Primaries and secondaries pale yellowish green, bordered on the first with blackish brown; this color including the entire outer web of the first two primaries, the secondaries being only tipped with blackish brown. Frontal leaf or wattle divided into three lobes on top, broad above, narrowing to

where it joins the forehead, yellow in skin, probably red or orange in life. Base of mandible bluish white, with a space of carmine between it and the wattle; rest of bill bright yellow. Metacarpal spur large and sharp at point. Legs and feet dull olive. Total length, 9; wing, 5-5½; tail, 2¼; bill, 1⅝; tarsus, 2⅛ in.

Young:—Top of head and nape pale brown, a superciliary yellowish white stripe from base of maxilla to nape of neck. A black stripe from behind the eye, narrow at first, but widening as it proceeds, passes down the side of neck, and crosses the upper part of back. Chin, throat, sides and front of neck and entire underparts white, with a strong buff tinge on the upper part of breast. Back and wings pale bronzy brown. Primaries and secondaries like the adult, with slightly more brown on the primaries. Rump and upper tail-coverts purple. Tail purplish black. Frontal wattle rudimentary. Bill yellow, blue at base. Feet and legs olive.

HABITAT. Haiti (Cory). Cuba (Cory). Texas (Merrill). Mexico (De Oca, Markham, Sumichrast). Guatemala (Leyland). Costa Rica (Salvin). Honduras (Taylor). Yucatan (Gaumer). Carthagena, Colombia (Edwards, Sclater).

In 1758 Linnæus gave to the bird from Carthagena represented in plate 48 of Edwards's 'Natural History of Birds,' the name of *Fulica spinosa*. In 1760 Brisson placed this bird among the synonyms of his "Chirugien varié," and some more allied to it, in the genus *Jacana*. In 1766 Linnæus in his 12th edition, disregarding all that had been done before with this species, both as to other authors and his own writings as well, gave the bird of Edwards's plate 48 the specific name of *variabilis*, and placed it in his genus *Parra*, manufactured for the occasion, ignoring the prior claims of Brisson in the premises. That Edwards's plate represents the *P. gymnostoma* auct., and not *P. jacana* auct., is evidenced by both the colored figure and the description, as the latter states that the frontal wattle, or as he calls it, the 'loose flap,' is "scalloped with three scollops on the tip," and his plate shows this, and there is no indication of any side wattles at base of bill. The wattle of *P. jacana* is bi-lobed, and there are pendent side wattles, even in young birds. This is the history of this species up to 1766, and of the way it received its baptism. Now what name must it bear? Those who adhere to the 1758 edition of Linnæus say *spinosa;* those who prefer the 1766 say *variabilis*. I have begun with 1758, not that I am altogether satisfied that it is the proper one, for when an author studiously ignores his own previous writings and consolidates

himself, so to speak, as Linnæus does, in his 12th edition, I do not see that any ornithologist should be troubled about earlier dates so far as Linnæus is concerned. But in this instance (as it is a moot question among ornithologists as a class, which edition should have priority), the name *spinosa* means something when applied to a Jacana, and *variabilis* does not, and so I have adopted it. In this 12th edition, there is no mention made of *Fulica spinosa*, either in that genus, or as a synonym of *Parra*, its author having apparently decided to obliterate it entirely.

Specimens of this bird from Cuba and Haiti agree precisely with examples from Mexico and Central America, and therefore *P. violacea* Cory will have to become a synonym.

Metopidius indicus.

Indian Jacana LATH. Syn. Suppl. p. 257.

Parra indica LATH. Ind. Ornith. 1790, p. 765.—VIEILL. Nouv. Dict. Hist. Nat. 1817, p. 447; *ib.* Ency. Méth. 1823, p. 1056.—SCHLEG. Mus. Pays-B. Ralli 1865, p. 67.—SALVAD. Ucc. Born. 1874, p. 343.—INGLISS, Str. Feath. 1877, p. 46.—HUME & DAVISON, Str. Feath. VI, 1878, p. 464.—CRIPPS, Str. Feath. VIII, 1879, p. 304.—BUTL. Str. Feath. IX, 1880, p. 430.—LLOYD, Ibis, 1882, p. 470.

Parra cuprea VAHL. Shrieft. Naturh. Selsk. 1793, II, 2, p. 51.

Parra cristata VIEILL. Nouv. Dict. Hist. Nat. 1817, p. 450; *ib.* Ency. Méth. 1823, p. 1055.

Parra ænea CUV. Règ. Anim. 1817, I, p. 498; *ib.* Règ. Anim. 1829, I, p. 535, —LESS. Trait. Ornith. 1831, p. 539.—NITZSCH, Pteryl. 1867, p. 126. —FORBES, P. Z. S. 1881, p. 640.

Parra superciliosa HORSF. Trans. Linn. Soc. XIII, 1821, p. 194; *ib.* Zool. Res. pl. 64 (1824).

Metopidius æneus WAGL. Isis, 1832, p. 279.

Hydralector cristatus WAGL. (*nec* VIEILL.), Isis, 1832, p. 280.

Parra atrata TICK. Jour. Asiat. Soc. Beng. 1833, II, p. 582.

Parra melanochloris VIEILL. Gal. Ois. 1834, II, pl. 264.

Parra melanoviridis VIEILL. Gal. Ois. 1834, II, p. 164.

Metopidius indicus BLYTH, Cat. B. Mus. Asiat. Soc. Beng. 1849, p. 273. —JERD. B. Ind. 1862, p. 708.—HUME, Nests and Eggs Ind. B. 1873, p. 591.—OATES, B. Brit. Burm. 1883, p. 358.

Adult:—Head, neck, breast, flanks, abdomen and thighs rich dark green, glossed in certain lights with purple reflections. Chin white. A broad white stripe extends from above the eye to the nape. Back and wings pale greenish bronze, this color separated on the back from the dark green of the neck by a line of bright purple. Lower back, rump, upper and under tail-coverts maroon. Tail chestnut. Outer secondaries black on

inner, bronze on outer webs; innermost ones all bronze. Primaries black with a green gloss. Frontal shield and basal half of maxilla, blue, with a rose-colored spot on either side; remaining portion of maxilla and the entire mandible yellowish green. Metacarpal spur small and blunt. Legs and feet bluish slate color. The bill, according to Oates, varies considerably in color in different individuals. Total length, 10½; wing, 6¾; tail, 2¼; tarsus, 2½; bill along culmen, 1½ in.

Young:—Upper part of head chestnut; eyebrow brownish white; back of neck purplish green; sides of head, chin and throat white; front and sides of neck and upper part of breast bright buff; lower breast, abdomen and under tail-coverts white. Under wing-coverts and flanks purplish black. Back and wings pale bronze green. Rump and upper tail-coverts maroon. Tail has median rectrices bronze; remainder pale chestnut, barred diagonally with greenish black and bordered with white. The young is stated not to assume the adult plumage until the second spring moult.

HABITAT. India, Indo-Burmese Countries, Siam, Cochin-China (Oates), Ceylon (Temminck), Java (Horsfield), Sumatra? Borneo? (Salvadori).

Oates states that this species is spread over a greater part of India, Indo-Burmese countries, Siam and Cochin-China. It has the habits of the Water Hens, frequents swamps and ponds that are covered with floating plants, over which it easily walks. As a rule it is very tame, and takes wing reluctantly. It breeds in the rainy season, and the eggs, usually six in number, are pale buff, thickly covered with tangled black lines.

Metopidius albinucha.

Parra albinucha GEOFF. ST. HIL. Mag. Zool. 1832, cl. II, pl. 6.—ROCH & NEWT. Ibis, 1863, p. 172.—E. NEWT. Ibis, 1863, p. 458.—SCHLEG. Mus. Pays-B. Ralli, 1865, p. 70; *ib.* P. Z. S. 1866, p. 425.—POLL. & VAN DAM. Rech. Faun. Mad. 1868, p. 136.—FINSCH & HARTL. Vög. Ost. Afr. 1870, p. 783.—HARTL. Vög. Madag. 1877, p. 352.

Parra atricollis SWAINS. Anim. Menag. 1838, p. 334, sp. 160.

Adult:—General plumage of the body cinnamon brown; nape and sides of head, throat and front of neck black; back of neck white. Front of head bare, bluish black. Wings cinnamon brown like the body, primaries black with a greenish gloss. Upper tail-coverts white. Tail reddish cinnamon, tips of middle rectrices greenish black. Bill bluish black at base, inclining to horn color at the tip. Feet and tarsi apparently a bluish black. Wing, 6¼ in.; tail, 2½ in.; bill, 1¼ in.

HABITAT. Madagascar (St. Hilaire, Hartlaub).

Metopidius africanus.

Parra africana GMEL. Syst. Nat. 1788, p. 709.—VIEILL. Nouv. Dict. Hist. Nat. 1817, p. 447.—LESS. Trait. Ornith. 1831, p. 539.—SWAIN. Zool. Illus. 1831-32, pl. 6.—G. R. GRAY, Gen. B. 1846, p. 589.—HEUGL. Syst. Ueb. Vög. N. O. Afrik. (1885), p. 255.—KIRK, Ibis, 1864, p. 334.—MONTEIRO, P. Z. S. 1865, p. 90.—SCHLEG. Mus. Pays-B. Ralli, 1865, p. 69; *ib.* P. Z. S. 1866, p. 425.—NITZSCH, Pteryl. 1867, p. 126.—POLL. & VAN DAM. Rech. Faun. Madag. 1868, p. 137.—GRAY, Handl. B. 1871, p. 70.—ANDERS. B. Damar-L. 1872, p. 328.—GARROD, P. Z. S. 1873, pp. 469, 641; 1875, p. 348.—HEUGL. Orn. Nord. Ost. Afr. (1873), No. 825.—HARTL. Vög. Madag. 1877, p. 354.—FINSCH & HARTL. Vög. Ost. Afr. 1870, p. 781.—FORBES, P. Z. S. 1881, pp. 640-642.—LAYD. B. S. Af. 1884, p. 649.

Metopidius africanus WAGL. Isis, 1832, p. 279.

Adult:—Front and top of head bare, in life bluish black; back of head and neck black tinged with green; throat, sides of head and front of neck white, passing into golden yellow on the upper part of the breast; entire plumage of the body bright cinnamon brown, divided on the under surface from the golden hue of the chest by a narrow dark line. Tail dark cinnamon red, tips of rectrices greenish bronze. Wings reddish cinnamon, primaries purplish brown, tips greenish. Metacarpal spur small and blunt. Bill bluish black, pinkish at the tip; tarsi and feet ash color. Total length, 10 in.; wing, 6; tail, 1¾.

HABITAT. Senegal, Gambin, Gold-coast, Gaboon, Benguela, Damara-Land (Heuglin). Coroca River, Mossamedes, Humbé (Anchieta). Okovango, Teonghe, and Boletle Rivers (Andersson). Lake Nzami (Andersson). Natal (Ayres). Algoa Bay, Mozambique (Heuglin). Zambesi (Kirk). Madagaska, Zambesi (Kirk).

Andersson says he never saw this species in Great Namaqua Land, and that it is scarce in Damara-Land, but common at Lake Nzami and the Okovango River. It goes in pairs or small flocks, has a lively disposition, and is generally easy of approach. In Natal, according to Ayres, it is found in considerable numbers in the lagoons and pools. Their food consists entirely of the seeds of plants and small insects.

Aphalus capensis.

Parra capensis SMITH, Birds S. Afr. 1849, pl. 32.—ANDERSS. P. Z. S. 1864, p. 7.—AYRES, Ibis, 1864, p. 360.—GURN. Ibis, 1864, p. 360.—ANDERSS. B. Damara-L. 1872, p. 330.—LAYD. B. S. Afr. 1884. p. 649.

Forehead yellow, superciliary stripe white; crown and nape, together with a narrow bar on side of neck at base, sides of the body and tail, dark reddish orange; back of neck purplish black; sides of neck and breast greenish yellow, chin, throat, breast, belly and under tail-coverts, white. Wings and back grayish brown. Metacarpal spur, small and blunt. Bill yellowish brown. Legs and feet greenish yellow. Total length, 7¼; wing, 3¾; tail, 1 5-6.

HABITAT. South Africa, Natal (Ayres). Damara-Land (Andersson). Algoa Bay (Smith).

This species, described by Sir Andrew Smith (l. c.) is smaller than its relative the *M. africana*, and dwells in similar localities. In Natal, Mr. Ayres found them abundant on Sea Cow Lake, and if they approached any of the larger species they were immediately chased away, and there was constant squabbling between them. One habit this bird possesses is peculiar, that of dipping the head up and down like some of the small Plovers. Like *M. africana*, Andersson says, it does not occur in Great Namaqua-Land, is rare in Damara-Land, but common in the Lake regions, and on the Okovango, where it breeds.

As this species has the head fully feathered it cannot very well be placed in the genus *Metopidius*, with *albinucha* and *africanus*, which have the top of the head more or less bare of feathers, and I have therefore proposed the term *Aphalus* (ἄφαλος) for it, with the following characters. Head completely feathered. No wattles or fleshy crest upon the head. First and second primaries longest, third, fourth and fifth equal. Closed wing reaches to near the tip of tail. Tarsi strong and short. Bill straight, slender, wedge-shaped at tip.

Hydralector gallinaceus.

Parra gallinacea TEMM. Plan. Col. pl. 464.—LESS. Trait. Ornith. 1831, p. 539.—GOULD, B. Austr. IV, pl. 75; *ib.* Hand. L. B. Austr. 1865, II, p. 330.—G. R. GRAY, Gen. B. 1046, III, p. 589; *ib.* P. Z. S. 1860, pp. 365, 438. — RAMSAY, Ibis, 1867, p. 417, pl. 8, f. 3, egg. — D'ALBERT. P. Z. S. 1875, p. 530; *ib.* Ann. Mus. Civ. Gen. 1875, VIII, p. 799.—RAMSAY, P. Z. S. 1847, p. 344; *ib.* Proc. Linn. Soc. N. S. W. 1877, II, p. 199.

Hydralector gallinaceus WAGL. Isis, 1832, p, 280.—WALD. Trans. Zool. Soc. 1872, VIII, p. 92.—MEYER, Ibis, 1879, p. 141.—FORBES, P. Z. S. 1881, p. 647.—SALVAD. Orn. Pap. e Moll. 1882, II, p. 308.

Hydralector cristatus REICH. (*nec* VIEILL). Syn. Av. Ras. 1848, pl. 112.

figs. 1126–29.—G R. GRAY, Handl. B. 1871, II, p. 70.—GARROD, P. Z. S. 1873, p. 34.

Parra cristata SCHLEG. (*nec* VIEILL.) Mus. Pays-B. Ralli, 1865, p. 68.—SHARPE, Trans. Linn. Soc. 1877, XII, p. 505.

Parra novæ-guineæ RAMSAY, Trans. Linn. Soc. N. S. W. 1878, II, p. 298, 1879, IV, p. 102.—SALVAD. Ibis, 1879, p. 327.

Adult:—Top of head, occiput, and stripe down the back of the neck, narrow line over upper part of back at base of neck, breast, flanks and under wing-coverts, black. Throat white. Sides of head and neck, as well as the neck in front, golden yellow. Spot from eye to base of mandible black. Back and wings pale, shining, grayish olive. Primaries greenish black. Rump and upper tail-coverts grayish olive, feathers tipped with black. Abdomen, thighs and under tail-coverts white. Tail dark olive green, almost black in certain lights. Forehead covered by a naked shield, having a central, horizontal, flat, keel-shaped membrane, extending from its posterior limits along the culmen nearly to the nostrils. This, together with the basal two thirds of the bill, is yellow in skin (aurora-red, according to Gould, in life); apical third of bill blackish brown. Metacarpal spur small and blunt. Legs and feet olive. Gould says that the "forepart of tibia is red with a mixture in patches of yellow and greenish-gray." There is no indication of this in the specimens before me. Total length, 9 in.; wing, 5¼ in.; tail, 2 in.; bill, 1¼ in. Young have entire under surface white; head and occiput, reddish chestnut; back, reddish brown.

HABITAT. Celebes (Meyer, von Rosenberg), Banda (G. R. Gray), Mysol (Wallace), Yule Island, Naiabui, New Guinea (D'Albertis), Port Essington, Austr. (Gould), Queensland, Northeastern New South Wales (Ramsay).

Specimens from New Guinea, according to Ramsay, differ somewhat, especially in the darker color of the wings; but, as Salvadori says, examples from New Guinea and Australia resemble typical ones from Celebes, and the differences of certain individuals are not sufficient to constitute a specific separation. He concludes his remarks, however, by mortgaging the Australian bird, by saying, that if it is deemed necessary to impose a new name upon it, he suggests *Hydralector novæ-hollandiæ*. The evidence presented to me by the specimens at my command does not render it necessary that this mortgage should be foreclosed as yet.

Hydrophasianus chirurgus.

Le chirurgien de l'Isle de Luçon, SONN. Voy. Nov. Guin. 1776, p. 82, pl. 45.

Tringa chirurgus SCOP. Del. Flor. Faun. Insub. 1786, p. 92 (ex SONN.).

Parra luzoniensis GMEL. Syst. Nat. 1788, I, p. 709, No. 13.—VIEILL. Ency. Méth. 1823, p. 1057.

Parra sinensis GMEL. Syst. Nat. 1788, I, p. 709, No. 15. — LESS. Trait. Orn. 1831, p. 539. — SCHLEG. Mus. Pays-B. 1865, p. 71. — NITZSCH, Pteryl. 1876, p. 126. — VIEILL. Gal. Ois. 1834, p. 165, pl. 265. — DAVID & WEND. Str. Feath. 1878, VII, p. 89.—KELHAM, Ibis, 1882, p. 185.

Hydrophasianus sinensis WAGL. Isis (1832) p. 270. — HEND. & HUME, Lahore to Yark. 1873, p. 290.—BLYTH, B. Brit. Burmah, 1875, p. 157.

Parra phœnicura HODG. Gray's Zool. Misc. p. 86.

Hydrophasianus chirurgus BLYTH, Cat. B. Mus. Asiat. Soc. Beng. 1849, p. 273. — JERD. B. Ind. 1864, III, p. 709. — HUME, Nest and Eggs Ind. B. 1873, p. 592. — SALVAD. Ucc. Bor. 1874, p. 343. — HUME & DAVISON, Str. Feath. VI, 1878, p. 464.—BALL, Str. Feath. VII, 1878, p. 229. — CRIPPS, Str. Feath. VII, 1878, p. 304. — DOIG, Str. Feath. VII, 1878, p. 371. — DAVID & OUST. Ois. Chine, 1877, p. 483. — LEGGE, B. Ceyl. 1880, II, p. 914. — FORBES, P. Z. S. 1881, pp. 640, 642. — OATES, B. Brit. Burm. 1883, p. 360. — MURR. Vert. Zool. Scinde, 1884. p. 259.

Adult:—Head, throat, and front of neck white. Nape black; hind part of neck bright golden yellow, separated from the white in front by a narrow black line. Back shining purplish brown, entire underparts purplish black. Rump, upper and lower tail-coverts, and tail blackish brown. Four median rectrices greatly lengthened. Wings have scapulars and tertials dark olive brown; upper and under wing-coverts, and secondaries white, the tips of the outer secondaries being brownish black. First primaries black; second black with a large part of the basal half of inner web white; third nearly all white on inner web, and the remaining ones all white save the tips, which are brownish black. First primary for about an inch from the tip is bare, with a narrow web at the end; next two with the shafts extending beyond the web; the remainder attenuated at the tip, diminishing in length as the innermost primary is reached. Metacarpal spur developed, sharp. Bill light blue at base, tip greenish. Legs and feet plumbeous blue. Claws black. Iris deep brown. Total length, 18-21; wing, 8-9¼; tail, 11-12¾; middle toe and claw, 3-3¼; bill at gape, 1¼ in.

Winter plumage:—Top of head and centre of hind neck, back, scapulars and tertials, hair-brown, with green and some bronze reflections on the back. Lesser and greater wing-coverts pale brown, the feathers barred with blackish brown and white toward the tips; rest of wing as in breeding plumage. A white stripe extends from the base of the bill over the eye; a black one runs from the gape through the eye and down the sides of the neck, terminating in a band across the chest. A shining golden stripe, continuous with the superciliaries, extends down the sides of the neck, behind this black one. Throat and front of neck and entire under surface pure white. Some feathers on flanks mottled with brown. Rump

and central tail-feathers moderately lengthened, hair-brown, darkest on the rump; rest of tail white.

HABITAT. Java, Borneo and Philippines (Oates). Formosa (Swinhoe). Java (Diard). Borneo (Salvadori). Ceylon (Legge). — India, as far as Scinde and Cashmere, Ceylon, China, Cochin-China, Malay Peninsula (Oates).

This state of plumage is frequently regarded as that of the immature bird; but these differ, according to Legge, by having a ferruginous stripe over the eye, front neck fulvous, the golden neck stripe paler, and a less developed chest band. The breeding plumage appears to be assumed by the feathers changing color, and not by a moult. In Chinese examples sometimes the hind neck golden patch is very large and the black border very broad. According to Hume, this is a shy species, running with wonderful facility over the floating weeds, lotus leaves, etc., and when alarmed, concealing itself by lying close to the plants, with its head and neck stretched out on a level with the body; sometimes, when possible, it will sink half of its body in the water. It is also an expert diver. It breeds from June to about the middle of September, according to locality. The nest, nearly two feet in diameter, is made of weeds and roughly put together, sometimes placed on the surface of the water, or on an island close to the water. The eggs, four in number, vary in color from pale brown to a deep rufous, and are covered with tangled lines of blackish, or reddish brown. The shell has a very lustrous appearance.

A NEW FORM OF CLAPPER RAIL.

BY GEORGE B. SENNETT.

Rallus longirostris scottii, subsp. nov. SCOTT'S RAIL.

The darkest of all the large Rails. Prevailing color on back very dark brown or black. This color prevails to such an extent that in most adults little notice would be taken of the olive gray edgings. Underparts also darker and with much less cinnamon than others of the genus. Flanks

more distinctly barred dark brown and white. Full grown young of the year dark brown, but not so nearly black as adults.

Types, ♂ ad. Collector's No. 4123, Dec. 27, 1886; ♀ ad. Collector's No. 4127, Jan. 8, 1887.

HABITAT: West Coast of Florida.

Types in American Museum of Natural History, New York. Collected by W. E. D. Scott, Tarpon Springs, Fla. Immature birds in National Museum, Washington, taken at Charlotte Harbor, Florida.

I had intended for this number of 'The Auk,' in connection with this short description of the new form, a paper on the entire group of large Rails. Although I have had large series at my command for study, yet the promise of still many more from various localities, leads me to defer the article for a future number, when it can be more satisfactory.

RECENT LITERATURE.

Palmén's Contributions to the Knowledge of the Bird Fauna of the Siberian Coasts of the Arctic Sea.*—The celebrated author of the 'Zugstrassen der Vögel' has given us in the work before us one of the most important and comprehensive, not to say *the* most important and comprehensive treatise on Arctic birds ever written. The public has been impatiently awaiting the publication of the ornithological results of Nordenskiöld's famous expedition (1878–1879), and though long delayed, it is nevertheless highly welcome to the students of northern ornithology.

The working up of the material could not have fallen into better hands, and we are thankful that the author has not only treated of the species collected, but that he also included those found by others, and particularly that he has given us a special chapter on the distribution of the species within the entire Arctic province, accompanied by a comprehensive bibliography.

Hitherto we have had no exact knowledge of the birds occurring along the Arctic coasts of Siberia, except a few scattered notes as to the birds inhabiting the extreme west or the extreme east of the territory, and Mid-

* Bidrag | till kännedomen om | Sibiriska Ishafskustens fogelfauna | enligt | Vega-expeditionens | iakttagelser och samlingar | bearbetade | af | J. A. Palmén. < Vega-Exped. Vetensk. | Iakttag, V, pp. 241–511. (Stockholm, 1887).

dendorff's observations in the Taimur Peninsula. We know that the Atlanto-glacial forms must meet their Pacifico-glacial neighbors somewhere on the coast in question, but just where we could only guess at. Palmén's eight tables (appended between pp. 500 and 501) are here of the greatest importance.

But it would carry us too far were I to give a resumé of all that is interesting in his book. I shall only mention that it is divided into four parts, the first of which treats of the localities in which the observations were made, and their physiographical character. The second, comprising the bulk of the memoir, contains the observations, localities, technicalities, etc., arranged under the head of each species, eighty of which are numbered as collected by the 'Vega' Expedition. The third part is devoted to the changes in the bird life on the northern coast of the Tschuktschi Peninsula during 1879, while the fourth treats of the distribution of the species over the entire Arctic province together with a synopsis of the literature. Finally (pp. 501-511) there are some general remarks, with tables, relating to the composition of the avifauna of the Tschuktschi Peninsula.

Want of time and space prevents me from going into detail, and when, in the following, I attempt to make a few desultory remarks, it is because they may be regarded as answers to questions raised by Palmén in his paper, to which I might be regarded as the proper respondent.

Palmén's doubt (p. 272, footnote) in regard to the statement made by Nelson (Cruise of the Corwin, 1881, p. 62) that Mr. Dall obtained a specimen of *Anthus pratensis* at St. Michael's, Alaska, is fully justified, as the specimen in question really is an *A. cervinus*. The former species has not been found in Alaska.

The remarks by Prof. Palmén in regard to the correctness of referring the East Asiatic Dunlins to the American form *Tringa alpina pacifica* has led me again to look into the question, and I can but state that after having carefully gone over the immense series of the U. S. National Museum, which has been considerably increased since I identified my Kamtschatkan specimens four years ago, I am still upholding that determination as correct. Palmén pays almost exclusive attention to the size of the two alleged forms, but it is quite plain that in birds of such variability of size as shown by the Dunlin this character can only be one of secondary consideration. The West-palæarctic form, *T. alpina typica*, differs clearly in coloration from the bird inhabiting both sides of the Pacific.

The latter is brighter above, and usually more red; the white on face and neck is purer, the black streaks and spots smaller, and the black patch on the belly purer and better defined. But there is also an *average* difference in size between the two forms, for in the American subspecies the wing varies between 111 and 126 mm. and the exposed culmen between 35 and 45 mm. while the corresponding range in the typical form seems to be 109 to 117 mm. and 27 to 35 mm. With the exception of one specimen (No. 89,180) the Bering Island birds come within the former limits, and in coloration they agree minutely with the brightest American skins. In

addition I may quote a pair of Japanese birds recently received. As to color they are typical *T. pacifica*, while the measurements run as follows:

U. S. Nat. Museum No.	Collector.	Sex and age.	Locality.	Date.	Wing.	Tail-f.	Exp. Culmen.	Tarsus.	Middle toe with claw.
109,427	Namiye	♂ ad.	Shimosa, Hondo, Japan	Apr. 22, 1883	121	54	39	28	...
109,426	do	♀ ad.	" " "	June 2, 1886	118	51	40	27	24

These are undoubtedly the same as the American birds. It is also well to bear in mind that Dr. Coues's type of *T. pacifica* (U. S. Nat. Mus. No. 9540) is the largest specimen in our immense series, viz., wing, 126 mm.; tail-feathers, 59 mm.; exposed culmen, 44 mm.; tarsus, 28 mm.; middle toe, with claw, 25 mm.

Palmén is quite right in supposing (p. 319, footnote) that the so-called *Tringa minutilla* collected by Dr. T. Bean* in Plover Bay, August 13, 1880, was erroneously identified, but he is wrong in supposing it to belong to *T. temminckii*, with which it could never be confounded, as the latter has a simply graduated tail with the outer tail-feathers pure white, and only the first primary with a white shaft, while the specimen in question has a doubly excised tail, gray outer rectrices, and white on the shafts of all the primaries. It is a young bird which in its general coloration and in most of its characters agrees closely with *T. minutilla*, but a close comparison with specimens of the latter in corresponding plumage shows that Bean's specimen is different. Point for point, however, it agrees minutely with a young *T. ruficollis* which I myself collected on Bering Island (U. S. Nat. Mus., No. 92,796), and to this species the specimen in question undoubtedly belongs. As already stated, young *T. minutilla* and *ruficollis* are very much alike, but the latter may be distinguished by longer wings, stouter and *comparatively* shorter bill, more white on the shafts of the primaries and broader white edges to the inner (proximal) primary quills, grayish rump with lighter edges to the feathers, instead of the nearly solid black rump of the other species, generally lighter upper surface, more grayish sides of head and neck, and uniform grayish chest which in *T. minutilla* usually is more streaked with dusky. Bean's specimen (U. S. Nat. Mus., No. 81,413) measures as follows: wing, 97 mm.; tail-feathers, 45 mm.; middle toe with claw, 17 mm.; exposed culmen, 15.5 mm.

Very interesting is the demonstration (pp. 343-346) of the occurrence of *Charadrius dominicus*, the American Golden Plover, on the Tschuktschi Peninsula, which goes to show that the ranges of the two races cross each other in the region bordering the northern part of Bering Sea, the

*Proc. U. S. Nat. Mus., V, 1882, p. 164. By a curious mistake Palmén quotes this specimen as collected by Mr. Dall, and throughout the book he refers to Dr. Bean's observations in the paper quoted as made by Dall (*e.g.* pp. 491, 492, 494, etc.). In the first sentence of the paper Dr. Bean distinctly states that "the collection ..... was made by the writer [Bean]."

Asiatic form, *Ch. d. fulvus*, migrating into northwestern Alaska to breed, and the American form crossing Bering's Strait into Asia. Mr. Ridgway and I have examined immense series of these birds from the regions in question apropos of his 'Water Birds of North America' and 'Manual of North American Birds,' as well as my 'Ornithological Explorations in Kamtschatka' and my various papers on Japanese and Hawaiian ornithology; and from the fact that we found no *Ch. fulvus* among the numerous Golden Plovers collected during the migrating season in more southern latitudes in America, and no *Ch. dominicus* among the Asiatic or Australian specimens, we concluded that all *Ch. dominicus* migrate south along the American coasts, and all *Ch. fulvus*, whether bred in Alaska or not, along the Asiatic shores. I am inclined to conclude that the Tschuktschi individuals of *Ch. dominicus* also retrace their steps across Bering's Strait and join their American confrères in going South, for, even if there were no further evidence, it seems probable that were the small Tschuktschi colony of the American form to travel along the migrating routes of *Ch. fulvus* they would soon be utterly absorbed by the latter. I do not believe that two *races* (and Palmén admits that they are only races, p. 346) can migrate along the same route without their becoming entirely assimilated. Of course, single individuals, or even small detached flocks, of one race may be led by some accident to follow the route of the other race, especially in a case like the present where the apparent routes cross each other, but these individuals prove nothing as to the *regular* route of the race, so that even if isolated specimens of *Ch. dominicus* should be found occasionally in southern latitudes of Eastern Asia, such occurrence would be no valid argument against the generalization made by me (Results Orn. Expl. Kamtsch., p. 105), in fact, they are to be *expected*, and it would be strange indeed did they not occasionally occur. Prof. Palmén, however, takes exception to my conclusion, simply because Swinhoe in former days recorded the capture of both *Ch. fulvus* and *dominicus* (*virginicus*, as he called it) in China and Japan, and he thinks it unsafe to generalize before all Swinhoe's examples have been re-examined. Now, in the first place, it is pretty safe to say that Swinhoe at that time had not grasped the true differences between the two forms; in the second place,

U. S. Nat. Museum No.	Collector.	Sex.	Locality.	Date.	Wing.	Tarsus.
					mm.	mm.
107,067	Swinhoe	♀	Canton, China	April 30, 1860	166	44
107,066	"	....	Amoy, "	Sept., 1866	161	42
107,104	"	....	" "	Oct. 15, 1866	160	42
107,103	"	....	" "	Oct. 15, 1866	168	43
107,068	"	....	" "	Sept., 1867	154	44
37,757	"	....	" "	 1867	163	45
107,107	"	....	Hainan, "	April, 1868	164	44
107,108	Blakiston, 1644	♀	S. Yezo, Japan	July 14, 1874	161	43

Mr. Seebohm, the present owner of the Swinhoe collection has expressly declared that *Ch. virginicus* "has not yet been found in Asia"; in the

third place, I have before me seven specimens collected by Swinhoe in China and one from Japan determined by him; these are all true *Ch. fulvus* as will be seen from the accompanying measurements, but the conclusive part of it is that the first and the last specimens of the series measured are determined by Swinhoe as *Ch. virginicus*, this name being written on the labels in his own handwriting, while the others are named *Ch. fulvus*.

I may finally mention that one of the stray migrants of *Ch. dominicus* to be expected on the route of *Ch. fulvus* seems to have been captured by the 'Vettor Pisani' party in Olga Bay, Gulf of Tartary, September, 1879 (Giglioli and Salvadori, P. Z. S., 1887, p. 585; publ. 1888). The wing of this specimen measured 180 mm., and consequently is considerably larger than the average *Ch. fulvus* but there is a probability that some of the large specimens of East-Asiatic Golden Plovers may not be pure-bred, as interbreeding between the two so closely allied forms is almost certain to take place where their ranges meet.

In regard to the *Grus* mentioned on p. 348 as having been taken "to the north of Jakutsk," on Mr. Taczanowski's authority. I may remark that the latter gentlemen has afterwards specified the locality as being "Cap Tschukotsk" (Bull. Soc. Zool. France, 1876, p. 246) whence came also the specimens of *Turdus aliciæ* and *Macroramphus* quoted by him (*l. c.* pp. 148, 255).

I am pleased to see that Prof. Palmén has arrived quite independently at the same results in regard to *Rissa pollicaris* as myself. The North Pacific Kittiwake is certainly more distinct than has formerly been supposed, and there is no good reason for including the true *R. tridactyla* among the birds of that region.

On page 370 Prof. Palmén describes a new subspecies of the Herring Gull as *Larus argentatus* var. *vegæ*, "characterized by a particularly dark gull-gray mantle and flesh-colored legs," from the countries bordering on Bering Sea and adjacent waters. There is no doubt in my mind that this is the bird which North American ornithologists (including A. O. U. Check List) call *Larus cachinnans* "Pallas," and I have always had a suspicion that the color of the feet of this bird as given in North American publications was erroneous, it being in most cases stated to be yellow, and my suspicion has been confirmed by the fact that Mr. P. L. Jouy in his ms. catalogue gives the color of feet of two specimens from Japan (Jouy, Nos. 1030, 1031) otherwise indistinguishable from *L. cachinnans* Auct. Amer. as "very pale flesh color." The Mediterranean bird, on the other hand, is known to have yellow feet, and as Pallas describes his *L. cachinnans* as having "pedes pallide flavescentes" (Zoogr. Ross. As., II, p. 319), with the principal habitat "Mare Caspium," while he does not mention it as occurring in the Pacific, it seems as if Palmén were right in giving the form from the North Pacific a new name. I am not prepared, however, to accept as yet a trinominal appellation, as the true status and relationship of the present Gull are not well established, and propose to recognize it as *Larus vegæ* (Palmén).

Had Palmén consulted my 'Remarks on the species of the Genus *Cep-*

phus' (Proc. U. S. Nat. Mus., VII. 1884, pp. 210-229) he would have found all the doubts expressed by him on pp. 390-391 in regard to the distribution of *Cepphus mandtii* in the Pacifico-glacial waters cleared up, and he would not have urged a reopening of the question.

Whether *Anser gambeli* really differs *sufficiently* to be recognized as a separate race of *A. albifrons*, is to my mind rather doubtful, as the Old World material at my command is very scanty, and I am afraid that the Old World ornithologists are in about the same difficulty with respect to *A. gambeli*. However, Mr. Ridgway and I, going over our material conjointly, found that the length of the exposed culmen in typical *A. albifrons* varies between 40 and 45 mm., while in *A. gambeli* the range is between 46 and 60 mm. The 'Vega' expedition skin with a bill of 47 mm. consequently falls within the limits of *A. gambeli*, and confirms my conjecture that all the birds of the Asiatic Pacific coast belong to this form.

Palmén, on p. 442, charges that authors have overlooked Kittlitz's statement in regard to the supposed occurrence of *Philacte canagica* (*Anser pictus* Pall.) in Kamtschatka, but on p. 318 of my 'Results, etc.,' he will find that I have referred to Kittlitz's bird, and identified it as probably belonging to *Branta hutchinsii*, a reference which is no doubt entirely correct.—L. Stejneger.

A Catalogue of the Birds of North Carolina.*—The author is induced to present this work in its "present imperfect form" in "the hope that the publication now of the records of the work, so far as it has progressed, may stimulate a desire in resident North Carolinians in different parts of the State to collect material and record observations of the birds to be found within our State limits." Two hundred and fifty-five "species and subspecies" are enumerated, of which "about 120 species have been observed and absolutely identified" by the author, who acknowledges his indebtedness, for notes on the occurrence of the major portion of the remaining one hundred and thirty-five, to Charles F. Batchelder, William Brewster, H. H. and C. S. Brimley, and John S. Cairnes, but has evidently overlooked Coues's 'Birds observed at Fort Macon, N. C.,'† and also Sennett's 'Observations in Western North Carolina Mountains in 1886,'‡ which contain twenty species not included in the present 'Catalogue,' while a re-examination of Cairnes's list will add one more. Being largely based on the printed works of the authors mentioned, it contains comparatively little original matter requiring comment, but notices of the capture of *Chen cærulescens* ("taken on Bogue Beach, one mile from Fort Macon in spring of 1884") and *Spizella pallida* ("Chapel Hill, March 8, 1886") are apparently here recorded for the first time. An appendix,

* Preliminary Catalogue of the Birds of North Carolina, with notes on some of the species. [By] George F. Atkinson. Contributed from the Biological Laboratory of the Univ. of N. C., No. VI. Journal of Elisha Mitchell Scientific Society, 1887, Part 2.

† Proc. Acad. Nat. Sci. Phila., 1871, pp. 18-47; 1878, pp. 22-24.

‡ Auk, Vol. IV., July, 1887, pp. 240-245.

"Containing a List of [81] Birds we may reasonably expect to take in the State," is given in conclusion. Several of the species here mentioned hold a rather doubtful place, and others might obviously be included, while two have before been given in the body of the work. The list is well printed, with but few typographical errors, and its author is to be congratulated on having inaugurated a movement to thoroughly investigate the avifauna of this most interesting State.—F. M. C.

Minor Ornithological Publications.—The '**American Field**,' Vols. XXIII to XXVIII, 1885-1887, contains, in addition to articles from the 'American Naturalist,' 'The Auk,' 'Popular Science Monthly,' etc., the following (Nos. 1200–1286) :—

1200. *The Genus Helminthophaga.* By Dr. Morris Gibbs. *American Field*, **Vol. XXIII**, No. 1, Jan. 3, 1885, p. 8.—A review of the four species of this genus which have been recorded from Kalamazoo County, Mich.

1201. *The Crow.* By F. L. Paine. *Ibid.*, No. 1, Jan. 3, p. 9. On its destructiveness to crops.

1202. *Migration in the Mississippi Valley.* By W. W. Cooke. *Ibid.*, No. 2, Jan. 10, p. 32.—A call for observers of the migration in the region mentioned.

1203. *Caging Quails.* By A. Scherer. *Ibid.*, No. 2, Jan. 10, p. 32.

1204. *Arrival of Chinese Game Birds.* From the 'Portland Oregonian.' *Ibid.*, No. 3, Jan. 17, p. 57.

1205. *How to Identify Birds.* By Everett Smith. *Ibid.*, No. 6, Feb. 7, p. 127.—An offer to name specimens forwarded for examination.

1206. *The Loggerhead Shrike in Virginia.* By Plover [John S. Wise]. *Ibid.*, No. 7, Feb. 14, p. 152.

1207. *The Genus Vireo in Michigan.* By Dr. Morris Gibbs. *Ibid.*, No. 9, Feb. 28, p. 200.—A review of the six species which occur in the State.

1208. *What the Crow Eats.* By E. S. Stark. *Ibid.*, No. 11, March 14, p. 248. (See also note under same heading by N. Ferguson.)

1209. *Inheritance in Birds.* By E. Haugh. *Ibid.*, No. 12, March 21, p. 272.—A Canary imitates the call of a young chicken.

1210. *The European Sparrow.* *Ibid.*, No. 13, March 28, p. 295.—A letter from Robert Ridgway to Captain W. McK. Heath, condemnatory of *Passer domesticus* and approving of its complete extermination.

1211. *What the Crow Eats.* By Frank Felkman. *Ibid.*, No. 16, April 18, p. 367.

1212. *A Hybrid Duck.* By G. Frean Morcom. *Ibid.*, No. 16, April 18, p. 368.—*Anas boschas* + *Anas obscura*.

1213. *The Family Picidæ in Michigan.* By Dr. Morris Gibbs. *Ibid.*, No. 18, May 2, p. 415.—A review of the nine species recorded from the State. (See also No. 19, May 9, p. 438.)

1214. *The Merciless War upon the Birds.* By Charles Aldrich. *Ibid.*, No. 20, May 16, p. 463.—On the destruction of birds for millinery purposes and the necessity of passing stringent laws for their protection.

1215. *Quail, Partridge, Grouse.* By Julius P. de Conine. *Ibid.*, No. 23, June 6, p. 536.—On their correct vernacular names.

1216. *A Mallard Duck's Nest in a Tree.* By E. O. Brauns. *Ibid.*, No. 23, June 6, p. 536.—Near Tracy, Minn., a Mallard appropriates an old Hawk's nest placed twenty feet from the ground in an oak tree twenty feet from the nearest water.

1217. *A Quail Inters its Mate.* From the 'Chicago Times.' *Ibid.*, Vol. XXIV, No. 10, Sept. 5, p. 223.—A male Quail, in confinement, removes from the nest the body of its dead mate, buries it, and completes the task of incubation.

1218. *The Rain Crow and Log Cock.* By Col. G. D. Alexander. *Ibid.*, No. 11, Sept. 12, pp. 246-7.—On the habits of the Cuckoo and Pileated Woodpecker.

1219. *Domesticating Wild Mallards.* By James P. Leach. *Ibid.*, No. 12, Sept. 19, p. 270.

1220. [*A Quail on a Church Steeple.*] By George N. Billings. *Ibid.*, No. 13, Sept. 26, p. 296.

1221. [*The Great Horned Owl.*] By G. O. G. *Ibid.*, No. 18, Oct. 31, p. 416.—Notes on its habits.

1222. [*Quail Nesting in November.*] By A. J. *Ibid.*, No. 23, Dec. 5, p. 538.—A nest with eleven fresh eggs found at High Point, N. C., November 16. [See also *Ibid.*, No. 24, Dec. 12, p. 562.)

1223. [*Hawks killed for Bounty.*] *Ibid.*, No. 24, Dec. 12, p. 562.—One thousand, five hundred and twenty-two Hawks said to have been killed during the last nine months in Cape May County, N. J.

1224. [*Wild Pigeons in California*]. *Ibid.*, No. 24, Dec. 12, p. 562.—Reported to be abundant near Watsonville, Cala.

1225. *Bird Ways.* Editorial. *Ibid.*, No. 25, Dec. 19, p. 577.—A review of Mrs. Olive Thorne Miller's book entitled 'Bird Ways.'

1226. *A Parrot's Affection for a Puppy.* By Geo. D. Alexander. *Ibid.*, No. 25, Dec. 19, p. 585.

1227. [*A Golden Eagle at Bear Island, Nova Scotia.*] *Ibid.*, No. 25, Dec. 19, p. 585.

1228. *Self-Domestication of a Partridge.* By Geo. D. Alexander. *Ibid.*, No. 26, p. 609.—A Quail makes its appearance daily to receive a share of the food given to barnyard fowls.

1229. [*A. O. U. Committee on Bird Protection.*] Editorial. *Ibid.*, Vol. XXV, No. 6, Feb. 6, 1886, p. 129.—Notice of the formation of a committee to promote the protection of birds.

1230. *A Wonderful Parrot.* By Jos. R. Trissler. *Ibid.*, No. 11, March 13, p. 250.—On the accomplishments of a tame Parrot.

1231. *Fashion and the Birds.* Editorial. *Ibid.*, No. 12, March 20, p. 265.—On the destruction of birds for millinery purposes.

1232. [*An Odd Looking Fowl.*] By S. M. Harper. *Ibid.*, No. 12, March 20, p. 272.—A hybrid between a Guinea fowl and a game chicken.

1233. [*Ostriches for California.*] *Ibid.*, No. 15, April 10, p. 345.—Thirty-six Ostriches received at Galveston, Texas, from Port Natal, Africa, to be used for breeding purposes in California.

1234. *Save the Birds.* Editorial. *Ibid.*, No. 16, April 17, p. 361.—An appeal for the protection of birds.

1235. [*The Jardine Collection.*] *Ibid.*, No. 23, June 5, p. 535.—The collection of birds formed by the late Sir William Jardine to be sold at auction.

1236. *Birds of Plumage.* Editorial. *Ibid.*, No. 24, June 12, p. 533.—Noting a decrease in the demand for birds for millinery purposes.

1237. *The Fauna of Minnesota — Their Traverses and Routes of Migration.* By Charles Hallock. *Ibid.*, No. 25, June 19, p. 583.—Minnesota, intersected by lines of migration running north and south, east and west, considered to possess an unusually rich fauna.

1238. *The Mechanics of Soaring.* By I. Lancaster. *Ibid.*, No. 26, June 26, p. 607.—An attempt to explain, by mechanical laws, the soaring of birds.

1239. *The Drumming of the Ruffed Grouse.* By C. H. Prescott. *Ibid.* Vol. XXVI, No. 2, July 10, p. 31.

1240. [*The Messina Quail in Maine.*] By Frank Henshaw. *Ibid.*, No 2, July 10, p. 32.—One seen near Thorne's Corner, Maine.

1241. *Mallards Breeding in Confinement.* By A. A. Bogen. *Ibid.*, No. 3, July 17.

1242. *Habits of Southern Cranes.* By C. H. Wood. *Ibid.*, No. 8, Aug. 21, p. 175.—On the breeding of Herons at Moss Point, Miss.

1243. *The Wild Turkey—Its Domestication and Hybridization.* By John Dean Caton. *Ibid.*, No. 11, Sept. 11, p. 247.

1244. *They are to be Worn.* Editorial. *Ibid.*, No. 15, Oct. 9, p. 337.—Wings and tails of birds to be used on bonnets instead of whole birds.

1245. *Domestication of the Wild Turkey.* By W. C. A. (Greensborough, Ala.) *Ibid.*, No. 15, Oct. 9, p. 343.

1246. *Wild Ducks for Domestication.* By Junius P. Leach (Rushville, Ill.). *Ibid.*, No. 17, Oct. 23, p. 391.—A letter asking for assistance in procuring wild Ducks to domesticate.

1247. *Economic Ornithology.* *Ibid.*, No. 18, Oct. 30, p. 415.—On the work of the Division of Economic Ornithology, Dept. of Agriculture, in procuring data concerning the relations to man of *Passer domesticus* and *Dolichonyx oryzivorus.*

1248. [*Wild Pigeons.*] *Ibid.*, No. 18, Oct. 30, p. 415.—"Only two droves are known to exist in the United States today, one in Pennsylvania and one in Indian Territory."

1249. [*An Albino Nighthawk.*] By W. A. Strother. *Ibid.*, No. 18, Oct. 30, p. 415.—A perfect albino taken at Lynchburg, Va.

1250. *The Mocking Bird.* From the 'Macon, Ga., Telegraph.' *Ibid.*, No. 22, Nov. 27, p. 510.—Deploring its wanton destruction in the South.

1251. *Encysted Eggs in Birds.* By A. J. W. *Ibid.*, No. 22, Nov. 27, p. 510.—Passage of the egg from the oviduct being prevented, it is soon surrounded by membranes, and thus becomes firmly fixed at the point of detention. "Such a state of affairs will greatly disturb the physical economy of a bird, causing all the phenomena of fever and its debilitating effects."

1252. [*Explosion of an Egg.*] *Ibid.*, No. 22, Nov. 27, p. 510.—Dr.

George Bauer of Yale College knocked senseless by the explosion of a "fermented" Ostrich egg.

1253. [*Albino Quail.*] By G. V. Young. *Ibid.*, No. 26, Dec. 25. p. 608.

1254. *Mountain Grouse.* By Roxey Newton (Boise City, Idaho) *Ibid.*, No. 27, Dec. 31, p. 632.

1255. *Birds of Song and Plumage.* By Dr. Geo. Willis. *Ibid.*, No. 27, Dec. 21. p. 632.—On the destruction of birds for millinery purposes.

1256. [*A Golden Eagle at Lake Geneva, Wis.*] *Ibid.*, No. 27, Dec. 31, p. 632.

1257. [*Chinese Pheasants in California.*] *Ibid.*, **Vol. XXVII**, No. 3, Jan. 15, 1887, p. 56.—Two cocks and a hen imported by John C. Siegfried of Alameda, California.

1258. *The Golden-crowned Accentor.* By J. H. Langille. *Ibid.*, No. 4, Jan. 22, p. 80.—On the flight song of *Seiurus aurocapillus.*

1259. *The Food Habits of Birds. Ibid.*, No. 6, Feb. 5, p. 127.—Circular issued by Department of Economic-Ornithology and Mammalogy, calling for information on the food of birds.

1260. [*Snowy Owls and Swans at South Haven, Michigan.*] By E. A. Lockwood. *Ibid.*, No. 6, Feb. 5, p. 128.—Ten Owls and two Swans taken in December.

1261. *The English Sparrow* (*Passer domesticus*). *Ibid.*, No. 7, Feb. 12, p. 153.—Circular issued by the Department of Economic Ornithology and Mammalogy, calling for information concerning *Passer domesticus.*

1262. *The Economic Relations of Mammals. Ibid.*, No. 8, Feb. 19, p. 176.—Circular issued by Department of Economic Ornithology and Mammalogy, calling for information on the habits of mammals.

1263. *The Food Habits of Birds.* By E. D. Lecompte. *Ibid.*, No. 9, Feb. 26, p. 200.—Replies to questions asked in the circular issued by Dr. Merriam (See No. 1259).

1264. *The Golden Pheasant.* By W. L. *Ibid.*, No. 8, Feb. 19, p. 176.—Circumstances concerning the introduction of the birds in Oregon.

1265. *The Habits of Snipes.* By A. Guthrie. *Ibid.*, No. 10, March 5, p. 224.—Snipe seen alighting in trees and on fences.

1266. *Hawks and Owls.* By Dr. A. K. Fisher, Ass't Ornithologist U. S. Department of Agriculture. *Ibid.*, No. 11, March 12, p. 246.—Deprecating the killing of Hawks and Owls under the mistaken idea that they are universally destructive to game and poultry.

1267. *Hawks and Owls.* By George Greene. *Ibid.*, No. 13, March 16, p. 296.—In reply to Dr. Fisher; Hawks considered destructive to Quails.

1268. *Hawks and Owls.* By W. C. A. [=W. C. Avery]. *Ibid.*, No. 16, April 16, p. 367.—Personal experiences, confirmatory of Dr. Fisher's statements. (See No. 1266.)

1269. [*An Albino Redwing Blackbird.*] By R. B. Morgan. *Ibid.*, No, 16, April 16, p. 367.—Entirely white except the shoulder patches, which are normal.

1270. ***Foul Murder.*** By C. D. Hess. *Ibid.*, No. 18, April 30, p. 424.—On the slaughter of Robins in the spring for the Baltimore markets.

1271. ***Hawks and Owls.*** By George Green. *Ibid.*, No. 21, May 12, p. 502.—Cooper's Hawk a Quail destroyer.

1272. ***Crows and Chickens.*** By George Green. *Ibid.*, No. 23, June 4, p. 551.—A Crow captures and flies away with a young chicken.

1273. ***Sight and Smell.*** By Charles Hallock. *Ibid.*, **Vol. XXVIII**, No. 1, July 2, 1887, p. 7.—On the sense of smell in Crows.

1274. ***Sight and Smell.*** By F. H. D. Vieth. *Ibid.*, No. 4, July 23, p. 78.—On the sense of smell in the Canada Jay.

1275. ***The Senses of Sight and Smell.*** By 'Birdo.' *Ibid.*, No. 5, July 30, p. 102.—On the sense of smell in Crows and Buzzards. (See also *Ibid.*, No. 10, Sept. 3, p. 223, and No. 16, Oct. 15, p. 367.)

1276. ***The Senses of Sight and Smell.*** By Charles Hallock. *Ibid.*, No. 7, Aug. 13, p. 150.—Sight considered of much greater importance to birds and mammals in procuring food, than the sense of smell, which the writer regards as an "auxiliary faculty" occupying "a decidedly secondary place to vision."

1277. ***The Game Birds of Oregon.*** By George Law. *Ibid.*, No. 8, Aug. 20, p. 174.—A popular account of some of the 'Game Birds' occurring in Oregon.

1278. ***The Death of Professor Spencer F. Baird. Obituary.*** *Ibid.*, No. 9, Aug. 27, p. 193.—(See also *Ibid.*, p. 223.)

1279. ***The Senses of Sight and Smell.*** By M. G. Ellzey, M.D. *Ibid.*, No. 9, Aug. 27, p. 199.—In reply to and agreeing with Mr. Charles Hallock. (See No. 1276.)

1280. ***Vultures Discover Carrion by the Sense of Smell.*** By W. C. A. [=W. C. Avery]. *Ibid.*, No. 12, Sept. 17, p. 269. (See also *Ibid.*, No. 14, Oct. 1, p. 318.)

1281. ***The Grouse Family.*** By W. B. *Ibid.*, No. 14, Oct. 1, p. 318. (See also *Ibid.*, No. 15, Oct. 8, pp. 343–344, No. 16, Oct. 15, p. 366, No. 17, Oct. 22, p. 391, No. 18, Oct. 29, p. 414.)—An extended paper on the American *Tetraonidæ*, written chiefly from a sportsman's standpoint, illustrated with several woodcuts, and containing much interesting biographical matter.

1282. ***Unusual Nesting Sites.*** By Walter E. Bryant. *Ibid.*, No. 17, Oct. 22, p. 392.—Notes from Nevada and California on twelve species of birds.

1283. ***Marsh Game.*** By James Norris. *Ibid.*, No. 19, Nov. 5, p. 438.—Notes on some of the game birds frequenting the marshes of the Chesapeake.

1284. ***Foreign Game.*** From the 'New York World.' *Ibid.*, No. 21, Nov. 19, p. 487.—On the game preserves in the vicinity of New York City and the nature and number of the birds with which they have recently been stocked.

1285. [*A Hybrid Duck.*] By F. L. C. *Ibid.*, No. 24, Dec. 10, p. 560.—***Anas boschas* + *Dafila acuta.***

1286. *The Strange Adventures of a Bob White.* By John A. Wells, M. D. *Ibid.*, No. 26, Dec. 24, p. 609.—An exceedingly interesting history of a Quail, which, captured and confined after it was fully grown, learned not only to recognize its master and dog captor, but even to evince a decided affection for both.—F. M. C.

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GENERAL NOTES.

Occurrence of Larus marinus on the Southern Coast of New Jersey.—While on a ducking expedition at Atlantic City, N. J., I observed, during and after the 'blizzard' of last March (1888), three or four specimens of the Great Black-backed Gull soaring about as familiarly and with as wary impudence as is their wont in more northern latitudes.

Though unable to procure a specimen, I was assured by Capt. Sam. Gale of the same place that they were of yearly occurrence on that coast during winter, and that he had a standing offer from a local taxidermist of five dollars for every specimen taken, but that so far he had only procured one. So certain was I of my own identification, I did not think it necessary to verify it by personal examination of the specimen referred to. I am quite confident that Nuttall's extension of the winter range of this Gull to the "sea coasts of the extreme Southern States" is yet capable of verification as far south as the entire coast of Virginia. Indeed so storm-loving, erratic, and solitary a species as this, sets all petty limits at defiance, to the distraction of note-taker and book-maker alike; and, as soon as you have him booked for residence in Cape May, presto, the next cold wave wafts him to Cape Charles and you begin to understand how it got into print that *Larus marinus* "extends its residence in America as far as Paraguay!"*—Sam'l N. Rhoads, *Haddonfield, New Jersey.*

The Yellow-nosed Albatross (*Thalassogeron culminatus*).—In 'The Auk' for January, 1888, Mr. Montague Chamberlain of St. John, N. B., mentions his having seen the skin of this bird in the Laval University, Quebec. The bird in question was killed on the 20th of August, 1885, at the entrance of River Moisic, on the north shore of the St. Lawrence. It was shot by a fisherman named Couillard Desprès. I saw the bird a few days after it was shot, but could not identify the species. I sent a short description of it to Dr. C. H. Merriam.

* Nuttall's Ornithology, Water Birds, p. 308.

While on the subject of rare visitors to the Gulf of St. Lawrence I will add that on the 13th and 14th of August, 1883, I saw a Man-of-war Bird, (*Tachypetes aquilus*) outside of the Bay here. A few days later it was again seen by Capt. Le Blanc of the 'Manicoriagan Light Ship,' thirty miles west of Godbout.—NAP. A. COMEAU, *Godbout, Quebec.*

Oidemia perspicillata in Florida.—A male of this species was taken January 23, near Punta Rassa, at the southern entrance to Charlotte Harbor. —FRANK M. CHAPMAN, *New York, N. Y.*

An Addition to the List of North American Birds.—I have in my collection two specimens, taken in Texas, of *Rallus longirostris caribæus* Ridg., heretofore only known in the West Indies. They are exactly like the type kindly sent me by Mr. Ridgway, and are undoubtedly referable to this form. A female was taken by Mr. Fred. Webster and myself at Galveston, Feb. 28, 1877, and a male was taken by my collector, Jno. M. Priour, at Corpus Christi, May 19, 1887.—GEORGE B. SENNETT, *Am. Mus. Nat. Hist., New York City.*

The Yellow Rail in Connecticut.—I am indebted to Mr. E. H. Austin of Gaylordsville, Conn., for a specimen of the Yellow Rail (*Porzana noveboracensis*) found at that place on March 24. Mr. Austin writes in reference to it: "It was picked up in the morning at the side of the road near the river by a boy who found it in an exhausted condition, and was taken into the house where it revived enough to run about the room, but finally died in the evening. The most singular point in my mind is that the Saturday it was found the thermometer stood at 10°, and the day before at 7°. It was taken into the Post Office as a rare or unknown bird."

It proved to be a male. I sent the contents of the gizzard to the Department of Agriculture, and Dr. A. K. Fisher says in a letter of the 30th inst.: "The seeds found in the gizzard of the Rail are as follows: one grape seed, one grass seed (*Paspalum*), two sedges (*Carex*). Probably the grape seed was taken in with gravel."

Mr. Austin has recorded his discovery in 'Forest and Stream.'—C. K. AVERILL, JR., *Bridgeport, Conn.*

Notes on Melanerpes torquatus.—During the springs of 1885, 1886, and 1887, I made constant observations upon the migration of birds at Fort Wingate, New Mexico, but during those three years never so much as observed anywhere in that region a specimen of Lewis's Woodpecker (*M. torquatus*); nor, as for that matter, at any other time during the year. This spring (1888), however, my son noted a bird of this species in a large pine tree close to the garrison buildings, and when I was out next day (May 8), four other specimens were in sight at one time, within two miles of the station. These, as usual, were extremely wary, and I only succeeded in obtaining one fine adult female.

Upon carefully plucking this bird, I found the pterylosis to be for the

most part typically Picine in character, though we are to note that the sub-median longitudinal capital apterium is but barely discernible, while I utterly failed to detect the presence of any naked temporal spaces whatever. In these particulars, *M. torquatus* nearly agrees with *Sphyrapicus*. The uropygial papilla is tufted, but the glands lying beneath the skin are small and elongated.

After having removed the integuments, it is seen that the free extremities of the limbs of the hyoid extend only as far forward as the middle of the parietal region, or the vault of the cranium; otherwise the lingual apparatus of this species seems to be as we find it in other Woodpeckers. It has a markedly small heart for the size of the bird, and the tissue of the liver is of a very friable nature. The gizzard is large and muscular, its periphery being raised into bounding muscular ridges, and the *musculi intermedii* very prominent. Making a section through it, I find a firm, rugose, horny lining, and its contents consisting of a quantity of small-sized hard-winged beetles, of a species unknown to me. Intestinal cœca are absent, and the intestinal tract, for its lower part, is of a very large calibre. Even at this time of the year, the ovaries in this specimen are small, the largest ova being no bigger than No. 4 shot. An account of the skeleton of this species will be given by the writer in another connection, when it will be fully compared with the skeletons of other North American species of the same group. — R. W. Shufeldt, *Fort Wingate, New Mexico.*

Early nesting of Octocoris alpestris praticola.—March 26, 1888, while returning from a trip after Crossbills, I flushed a female Horned Lark within one hundred feet of where I found my first nest last season (April 11, 1887), and as she acted as they usually do when nesting, out of curiosity I began to search, and was rewarded by finding the nest, a mere cavity in the side of a sandy knoll, lined with dead grasses, a little thistle down, and a few mayweed blossoms. The eggs had been incubated a few days. On the 21st, 22d, and 23d the thermometer ranged in the vicinity of zero, and in fact the spring has been very backward. When you approach the nest, *usually* the female sneaks from two to three rods before flying, then flies to a short distance, observes you closely, begins to pick on the ground, and then flies to a distant part of the field to be joined by her mate. Occasionally a female will hover for a moment over you, if you are close to the nest, but they vary so in actions that it is hard to describe the different peculiarities.

Since the above I have taken other sets. April 3, three nests of three eggs each in stubble fields on knolls. April 4, one set of four eggs, much incubated, in oat stubble. April 6, set of four fresh eggs in stubble, and the same day a nest with one young fledgling, which I should judge to have been two or three days old, on the side of a knoll in a newly seeded meadow. The young bird was about a foot outside of the nest, and very cold, but alive, for which I cannot account as the old birds were flushed about a rod from the nest. April 7, nest of four nearly fresh eggs, in oat

stubble as usual, on the side of a knoll. I find these birds breeding as late as June in favorable localities, "barren fields with not much if any herbage in them," which shows they must at least raise two broods annually. Before nesting the male is very active, singing from early morning until late evening, both on the ground and high up in the air. But as soon as the female begins her incubation he becomes silent, and keeps in a distant part of the field to warn her, as I often have seen him do, by flying close to her in the nest, *but not alighting*, soon to be followed by her and chased around as when mating.

Where early in the season you saw dozens of pairs singing, you will be surprised at the quietness now. But after beating about the field you will begin to disturb them, and will find as many birds as formerly.—GEO. E. HARRIS, *Buffalo, N. Y.*

Pine Grosbeak in Fulton Co., Kentucky.—The Evening Grosbeak has not appeared this winter as yet, but he has been replaced by the Pine Grosbeak (*Pinicola enucleator*), a flock of which, numbering eight or ten individuals, mostly females, appeared Feb. 7, 1888. O the 8th, 11th and 13th they were again seen, and on the 24th Mr. T. L. M'Cutchen who collected some for me in 1887, secured four specimens, one male and three females, but I was away from home, and he, not knowing the bird, did not keep them. On seeing me he gave me an excellent description of them and said he had shot, but not secured, a female on the 25th. Three or four females were seen yesterday, March 19 —L. O. PINDAR, *Hickman, Ky.*

Occurrence of the Chestnut-collared Longspur (*Calcarius ornatus*) and also of Maccown's Longspur (*Rhyncophanes maccownii*) in Apache Co., Arizona.—During the winter of 1887-88, I had several times noticed a small flock of birds which I did not know, about a mile west of the town of St. Johns, the county seat of this county (Apache), but as I usually had only a rifle or six-shooter I was unable to obtain a specimen for identification. About the 8th of March, however, my friend Mr. E. W. Nelson stated that he had lately obtained several specimens of the Chestnut-collared Longspur and showed me several. I at once guessed that the unknown birds I had seen were of the same species, and next time I came in to St. Johns, on the 10th of March, I brought my shot-gun. On my way out I saw the little flock, and was fortunate enough to procure four specimens which I packed up and took out to the ranch. I skinned three which were all *C. ornatus*, but on taking up the fourth I was at once struck by the greater size, heavier beak, bay on the wing-coverts, and black cap of the specimen in my hand. I looked it up and found it was undoubtedly *Rhyncophanes maccownii*. Next day I shot a second specimen about twenty miles southwest of St. Johns, also two more of *C. ornatus*. I showed this specimen to Mr. Nelson on March 14 and he agreed with me as to the species. On the same day about a mile west of St. Johns I found a large flock of *R. maccownii*, and shot eleven more specimens. At

first during the winter there was only a small flock of *C. ornatus* to be seen with probably a few of *R. maccownii* scattered among them, but on March 14 *C. ornatus* was scattered all over the country west of St. Johns, and where I killed the eleven specimens of *R. maccownii* there was a flock of about 1000 *C. ornatus*. There were about 500 of *R. maccownii* in the flock out of which I got specimens and the two species seemed then to be separate. The nature of the country where I found both species was very barren, there was only a little short white gramma grass and a few weeds. Two of the specimens of *R. maccownii* I found on skinning had peculiar parasitical worms coiled up in the lower outer corner of the eye space; one had five and the other two of these worms. They were about .75 of an inch long and about a thick as a stout piece of sewing cotton, and of a bright yellow color. In both species of birds the males predominated, thus of thirteen *R. maccownii* but one was a female. Of eight *C. ornatus* but one was a female. This is the first time I have seen either species in this district, and as Dr. Coues in his Key to North American Birds, and also the A. O. U. Code and Check list mention both birds as rare west of the Rockies, I send this notice to 'The Auk.'—JOHN SWINBURNE, *St. Johns, Apache Co., Arizona.*

Euetheia canora from Sombrero Key, Florida.—A Bird new to the United States.—Mr. M. E. Spencer, keeper of the light at Sombrero Key, Fla., has just sent me a package of birds which killed themselves against his light during the past spring migration. Among them was a pair of short olive green wings which I was unable to identify. On submitting them to Mr. Ridgway, he at once pronounced them to belong to a species of *Euetheia*, and comparison with specimens in the collection of the U. S. National Museum showed the species to be *E. canora*, the Melodious Grassquit, hitherto known only from Cuba. The bird was found dead on the lower platform of the light-tower on the morning of April 17, 1888. The wind was east, moderate; sky cloudy.

Another West Indian bird is thus added to the list of those known to occur on the islands and coast of southern Florida.—C. HART MERRIAM, *Washington, D. C.*

An Abnormal Scarlet Tanager.—A remarkable albino female Scarlet Tanager was procured at Germantown, May 8, 1888, and is now in my collection. The wings and tail are composed of pure white and ordinary blackish feathers in about equal proportions, while the wing-coverts consist of white, olive and canary-yellow feathers. All the rest of the plumage above and below is bright canary yellow, with one or two olivaceous feathers in the middle of the back. The legs and bill are very light pink. The bird was in company with several normal birds of the same species.—WITMER STONE, *Germantown, Pa.*

Prothonotary Warbler in Ontario. — While collecting Warblers near Hamilton on the morning of the 23d of May, 1888, I met a group which

had evidently just arrived from some favored point in the South, their plumage being particularly fresh and bright, and such rare species as the Mourning and Connecticut Warblers and the Green Blackcap being conspicuous. Presently I noticed one on a willow overhanging the water, which seemed to be a compromise between the Summer Yellow Bird and the Yellow-throated Vireo. On picking it up I was greatly pleased to find I had got a specimen of the Prothonotary Warbler—a female in the ordinary plumage of the season. It is the first record of the species for Ontario and the second for Canada, the first being that of a specimen which was found at St. Stephens, New Brunswick, by Mr. Boardman in October, 1862.—K. C. McIlwraith, *Hamilton, Ontario.*

Bachman's Warbler (*Helminthophila bachmani*) in Louisiana.—During March, 1888, I collected thirty-one Bachman's Warblers on the borders of Lake Pontchartrain, Louisiana. They were probably more abundant than in 1887, as about the same effort was made last year to secure them, by at least a dozen hunters, commencing earlier and continuing later in the season, with the result of but six specimens. It is somewhat remarkable that of the six secured in the spring of 1887 four were females while among the thirty-one killed this year there were not any females.

This bird, so long unsuccessfully sought for, is evidently a stranger to the forests of Louisiana except during the migration, for those taken this season were killed between the 2d and 20th of March, and although they were diligently sought for up to the middle of April no specimens were obtained later than the end of March, showing pretty clearly that the breeding place is farther north.

No sound was heard from them except in the case of two of the finest, which were so low down on the tree on which they were discovered, that their plumage was easily distinguished; my assistant reported that the shooting of the first failed to disturb the second one, which remained on the tree and uttered a chirping note as if calling to its dead companion. Nearly, or quite all the other specimens obtained were found in the company of a variety of other early Warblers in the tops of the sweet-gum, probably attracted by insects found in the buds and blossoms of this tree.

Of the Swainson's Warblers (*Helinaia swainsoni*), I secured but three specimens this year, against nine in 1887, and about forty in the spring of 1886. Although these birds do not arrive in Louisiana until about the middle of March, it is quite probable that many of them remain and breed in this latitude.—C. S. Galbraith, *West Hoboken, N. J.*

Helminthophila celata in Connecticut.—May 8, 1888, I shot a male bird of this species. It was in company with Nashville Warblers when killed. As far as I can ascertain this is the only specimen actually taken in Connecticut, although it has been observed close by the Connecticut line in New York.—Willard E. Treat, *East Hartford, Conn.*

Dendroica cærulea in the District of Columbia.—On May 5, 1888, I had the pleasure of adding *Dendroica ærulcea* to the fauna of the Dsitrict of

Columbia, by the capture of a single male shot on Rock Creek. Mr. P. L. Jouy some years ago reported having seen what he supposed to be a specimen of this bird, but this is the first time the species has been actually taken.—EDWIN M. HASBROUCK, *Washington, D. C.*

Seiurus noveboracensis notabilis in South Carolina.—The rapidly increasing list of birds essentially Western, occurring in South Carolina, is further augmented by the capture of an adult male Grinnell's Water Thrush, by the writer, near Chester C. H., April 28, 1888.—LEVERETT M. LOOMIS, *Chester, S. C.*

Two Records for Long Island, New York. — *Dendroica palmarum.* — I secured a female at Montauk Point, Sept. 7, 1885. This antedates by over two years the one recorded by Mr. William Dutcher as the first obtained on Long Island (Auk, Vol. V, April, 1888, p. 182). My bird was with a small flock, and at the time I did not suspect its identity.

Polioptila cærulea.—I shot a male at Montauk Point, Sept. 2, 1885. It was in one of the dense thickets common to that locality, and not in company with any other birds. This is, I believe, the third record for Long Island, the first specimen having been taken by Mr. N. T. Lawrence (Auk, II, July, 1885, p. 272) and the second by Mr. de L. Berier (Bull. N. O. C., VI, April, 1881, p. 126). Up to the present writing I know of no other captures of this species on Long Island, although the list of records for New England is now a large one.—JONATHAN DWIGHT, JR., *New York City.*

Birds at Aiken, S. C.—The notes below recorded were made at Aiken, South Carolina, in November, 1887.

A female *Quiscalus quiscula æneus*, taken on the 24th, and a single true *quiscula* on the 12th, were the only Grackles observed.

On the morning of the 12th, a flock of about fifty Crossbills (*Loxia curvirostra minor*) swept past me, almost within gunshot, half of them pausing for a moment in the top of a pine near by, then hurrying on to join those in advance, when they were soon and finally lost to view.

A male of the year of *Vireo solitarius alticola*, was taken November 11.

Thryothorus bewickii was taken on November 9 and 25, a specimen each day, the only ones observed.—FRANK M. CHAPMAN, *New York, City.*

Notes on Louisiana Birds.—Mr. C. S. Galbraith, of Hoboken, N. J., has kindly allowed me to examine a small collection of birds obtained by him at Mandeville, La., during the winter of 1887-88, in which I find a few species of special interest on account of the locality of capture. Among these are the Florida Barred Owl (*Syrnium nebulosum alleni*), the Florida Screech Owl (*Megascops asio floridana*), the Florida Blue Jay (*Cyanocitta cristata florincola*), the Purple and Bronzed Grackles (*Quiscalus quiscula* and *Q. q. æneus*, both typical), and the Cerulean Warbler

(*Dendroica cærulea*). Also several specimens of Swainson's Warbler, and a large series of Bachman's Warbler, as already recorded by Mr. Galbraith in the present number of 'The Auk.' Of special interest also is a pair of Crossbills (*Loxia curvirostra minor*), taken March 27, 1888; they are much smaller than northern birds of the same species, and the male is of a darker red. They were probably bred in the mountains or tablelands of Kentucky or Tennessee.

Mr. Galbraith informs me that Pine Finches and Juncos were rather common winter residents at the locality in question.

His collection contained also a Brown Thrush with a malformed bill, in which the bill is slender, lengthened, and curved to the right, with the upper mandible twisted partially beneath the lower, which is considerably longer than the upper. A Yellow-bellied Woodpecker presents a somewhat similar malformation, the mandibles being crossed near the base, and the lower one attenuated and greatly lengthened.

A beautiful albino Prothonotary Warbler (*Protonotaria citrea*) is also worthy of mention. The yellow is of normal extent and intensity, but the gray is entirely replaced by pure white. The wings and tail are thus pure white and the body deep intense yellow, the olive of the back being replaced with yellow. The specimen thus looks very much like a white-winged yellow Canary with a Prothonotary's bill.

All the birds above-mentioned, except the greater part of the Bachman's Warblers, have been purchased for the American Museum of Natural History.—J. A. Allen, *Am. Mus. Nat. Hist., New York City.*

Observations on Bird Migration at Milwaukee.—The Milwaukee Exposition Building occupies one square, between 5th and 6th Streets east and west, and State and Cedar Streets north and south. The building is located about one mile west from the Lake shore, and nearly in the centre of the city north and south. The main tower of the building is nearly in the centre of the structure, and rises over 200 feet above the street. During the Exposition this tower is illuminated by four electric lights of 2000 candle power each. They are lighted from 6 to 6.30 P. M. and turned out at 11 to 11.30 P. M., according to the condition of the atmosphere.

The weather previous to September 20-21 was exceptionally mild and pleasant, and but few birds were noticed migrating, *i. e.*, during the day time. I had not yet discovered that the electric lights on the tower attracted the birds to any extent. September 21-22 it grew suddenly cooler with raw cold north wind. On the morning of the 22d some of the employes of the Exposition climbed to the tower and found "lots of birds" dead. I procured a few of them, the rest becoming scattered before I had found it out. Of this lot there were no species of those I saw, not represented in my list of the next day except *Colaptes auratus* which I identified from some feathers a young lady had saved from the specimen.

The night of September 22-23 was raw and cold, with fresh north wind, and was very dark. The next morning I found the following species around the lights and on the accessible roofs.

	Adult.	Juv.
Setophaga ruticilla	1 ♀	4
Geothlypis trichas	1 ♀	3
Geothlypis agilis		6
Mniotilta varia		1 ♂
Compsothlypis americana		1 ♀
Helminthophila peregrina	1	5
Helminthophila ruficapilla		1
Dendroica castanea		4
Dendroica blackburniæ		1 ♂
Dendroica coronata		2
Dendroica vigorsii		1 ♂
Dendroica palmarum		5
Dendroica maculosa		3
Dendroica cærulescens		1
Dendroica virens		2
Seiurus aurocapillus		4
Seiurus noveboracensis		3
Troglodytes aëdon*		1
Regulus satrapa		1
Melospiza fasciata		1
Ammodramus sandwichensis savanna		1

This list comprises only such species as were procured and examined. I estimate that fully double this number of birds was scattered about on the different roofs in sight from the dome but not accessible without considerable risk and much trouble in procuring ladders, etc. They were too far away to identify with certainty, and most of them rolled down the roofs into the troughs, or to the ground, and were lost.

The night of September 23-24 was much like the preceding, but somewhat colder and less windy. On the morning of the 24th I procured the following species. These were not all killed on the night of September 23-24, however, as some of them that were found in the eave troughs had probably been killed one or two days previous.

Geothlypis agilis	3	juv.
Geothlypis trichas	3	"
Setophaga ruticilla	2	"
Dendroica palmarum	1	"
Dendroica castanea	4	"
Dendroica maculosa	2	"
Dendroica pennsylvanica	1	"
Dendroica vigorsii	1 ♂	"
Dendroica cærulescens	1 ♀	ad.
Dendroica striata	3	juv.
Helminthophila peregrina	4	"

*Flew in at main entrance to Exposition building about 9.30 P. M. and was caught. It is said there were others with it.

Vireo olivaceus*	4	juv.
Vireo gilvus	1	"
Seiurus auricapillus	1	"
Seiurus noveboracensis	1	"
Melospiza georgiana	1	"
Habia ludoviciana†	2 (♂ and ♀)	"
Piranga erythromelas	2 (♂ and ♀)	"
Turdus aonalaschkæ pallasii	2	"

September 24 was a very pleasant day with light northwest wind. The wind freshened in the evening, and many birds were noticed about the dome from 7 P. M. until 10.30 P. M. I did not go up during the evening but some of the small boys employed about the building did, and as I was afterwards informed secured a "market-basket full of birds." I did not see any of these. I climbed the tower early the next morning and was surprised not to find any birds until I found out the boys had preceded me.

The 26th being Sunday, no lights were lighted. Weather mild and fair with light southerly winds. On the evening of the 27th I went up on the tower, but the weather was too boisterous. There was a cold rain with high wind. Very few birds were seen, mostly Thrushes and one small flock of *Tringæ*. The birds merely circled around the tower once or twice, and passed on. I heard Gallinules, Rails, and Night Herons, but they did not approach the lights. The 28th it rained very hard, and as I could see no birds from below I did not go up. None were found dead next morning.

The 29th was rainy with high north wind. I went up on the tower about 8 P. M. The weather was unfavorable; I saw a few Thrushes, one Robin, and some small Sparrows, but they merely flew near the lights, sheered off, and passed on. None were found dead next morning.

On account of the exposure to wind and rain for two nights on the tower I got an attack of rheumatism and was unable to make any further observations until the birds had passed south.

Besides the species enumerated in the above lists I saw and heard the following, some from the street and some on the tower:

Totanus, either *melanoleucus* or *flavipes*, straggling flocks, quite noisy. Noticed several evenings, but did not approach very close to the lights.

Two or three loose flocks of small *Tringæ* circled rapidly around the lights a few times, and disappeared in the darkness. A flock of small Plovers, probably *Æ. semipalmata*, acted much the same way, but appeared to be lost and would wander away out of sight, soon return, pass close by the lights and after a few minutes return and go through the same manœuvre.

Thrushes were noticed frequently, especially on the 27th and 28th. At times there were eight or ten flying aimlessly around the lights, but never

* One of these was minus both wings.

† Female was minus both wings and tail.

going very close, nor flying directly at the lights as most of the Warblers did. I could not identify the species, but think most of them were *pallasii*. I saw one young Robin, but he soon bent his course downwards to some shade tree where I have no doubt he found a roosting place.

Carolina (?) Rails were frequently heard, especially on the 21st, 22d, and 23d; they seemed to be flying on a lower level than the dome, barely above the housetops. None were seen around the tower. The same remarks apply to the Florida Gallinule. Night Herons (*N. nycticorax nævius*) and some other Herons that I think were *Botaurus lentiginosus* passed frequently from the 22d to the 26th. They did not seem to be attracted by the lights and appeared to be flying considerably higher than the dome, I should think at least 100 feet or more. English Snipe were noticed a few times, but only flew rapidly by. This was one of the few species I observed that were flying in the normal manner.

Small Sparrows that looked like *Melospiza georgiana* were frequently noticed, but the species could not be determined with certainty. They arrived singly, and came from a lower level than the lights on the tower, and in passing by always directed their course downwards, as far as I was able to see them in the darkness.

One feature that especially interested me was that nearly all the birds I observed had a peculiar dragging flight like a bird wounded through the intestines; it reminded me forcibly of the peculiar flight of the male *Icteria virens* during nesting time. Any ornithologist who has observed this will recall the unnatural flight, the wings are raised high, tail dropped low and head raised, so that the body instead of being carried nearly horizontally is at a considerable slope. The first impression suggested was of extreme fatigue, but it is probable the birds are better able to sustain continued flight by flying in this manner with the wind.

Another interesting fact is that among the forty odd species and many times that number of specimens I only detected four adult birds.

Apparently most of the birds were killed by coming into contact with the electric wires, as there was not a bruise nor hardly a ruffled feather on them. Some had flown against the lights and broken or bruised their bills, others had torn the skin or feathers from the side of the head or throat, and in two instances the wings were gone. Two or three had their necks broken.

I estimate the number procured at about fifty per cent of those killed. A large number fell on inaccessible roofs, or were blown into the eave troughs during the high winds and lost.—Ludwig Kumlien, *Milwaukee, Wisconsin.*

Osteological Notes upon Puffins and Ravens.—In examining some skeletons of adult specimens of *Lunda cirrhata*, kindly loaned me by the Smithsonian Institution, I find, occupying the usual site of the bone, but completely enveloped by the tarsal theca, a rudimentary accessory metatarsal, or the hallux metatarsal, which is freely articulated, but all evidence of a basal phalanx of the toe is absent. Such a rudimentary element in

the skeleton of a bird is an interesting fact, and it sees its counterpart in the rudimentary limbs in such a lizard as *Ophisaurus ventralis*.

While engaged upon dissecting the eyes of adult Ravens (*Corvus corax sinuatus*), I have always found a firm osseous plate, of an elliptical outline, with a major axis of some 5 or 6 millimetres surrounding the entrance of the optic nerve, on the outer coat of the eye. In a 'Bulletin' which I have in the hands of the Smithsonian Institution for publication, I figure this structure, as well as the rudimentary metatarsal bone, to which I have alluded above. — R. W. SHUFELDT, *Fort Wingate, New Mexico.*

Abnormalities in the Ribs of Birds.—Those who have examined many series of skeletons are well aware that the number of ribs in any given species is liable to vary, and that an animal may possess a pair more than the normal number for the species, or that in exceptional cases a pair may be wanting.

The additional pair of ribs usually appears on the first lumbar vetebra, or what would normally be the first, although now and then a short, styliform pair of pleurapophyses may be present on the seventh vetebra of mammals, or in fishes on the ex-occipitals.

The greater number of segments in the vertebral column, and the more generalized the animal, the greater seems the tendency to variation, and in the Urodele Batrachia even the number of dorsal vertebræ is extremely inconstant.

The following list of costal abnormalities, noted in a comparatively small number of skeletons, would seem to show that in birds the rib element is subject to frequent variations.

Galeoscoptes carolinensis with but five pairs of complete ribs, instead of the normal passerine number of six, the abnormality being caused by the lack of a hæmapophysis on the rib attached to the fifteenth vertebra. The styliform rib on the fourteenth vertebra was also reduced in size.

Galeoscoptes carolinensis with seven pairs of ribs, a hæmapophysis connecting the ordinarily free rib of the fourteenth vertebra with the sternum.

Melanoptila glabrirostris and *Clivicola riparia*, each with a seventh pair of ribs with attached hæmapophyses on the second vertebra of the 'sacrum.'

Quiscalus purpureus and *Sturnella magna neglecta*, each with an additional pair of short slender ribs, devoid of hæmapophyses, on the second vertebra of the 'sacrum.' This is a rather curious coincidence, as the two birds are presumably nearly related. It is the more interesting from the fact that among birds the dorsal portion of the rib is the first to be suppressed, and instances are numerous—as among Raptores—where a pair of hæmapophyses is normally present without the slightest trace of corresponding pleurapophyses. An intermediate condition is found in some birds, *e. g.*, *Trochilus colubris* and *Cypselus apus*—a complete hæmapophysis supporting a pleurapophysis whose upper moiety is lacking.

Examination of the large series of sacra of *Alca impennis* in the collection of the U. S. National Museum shows that in this bird an extra (ninth)

pair of ribs was not infrequently present on the second 'sacral' vertebra. At some future day I hope to ascertain in what percentage of Great Auks this condition prevailed, but the most interesting fact is that when the additional pair of ribs is present there is usually at the same time a small parapophysis developed on the first true sacral vertebra, as if the rib-creating force had been felt still further down the line of vertebræ.

These abnormalities have been mentioned, as they seem to have a bearing on the reduction in the number of vertebræ which Baur, Balfour and Parker have shown has taken place among birds, and they may probably be regarded as the reappearances of ribs once normally present in the ancestral types of existing birds.—FREDERIC A. LUCAS, *Washington, D. C.*

CORRESPONDENCE.

[*Correspondents are requested to write briefly and to the point. No attention will be paid to anonymous communications.*]

The Sternum in the Solitary Sandpiper, and other Notes.

TO THE EDITORS OF THE AUK:—

Dear Sirs: Some little time ago, while looking over several skeletons of the Solitary Sandpiper (*Totanus solitarius* of the A. O. U check list), which I have in my private collection, I noticed that the sternum of this bird has but a single large notch on either side. Now the only two other allied species in our avifauna, so far as is known to me at present, thus constituted, are the Woodcock and Wilson's Snipe (*Gallinago delicata*), and I am uncertain about the genus *Macrorhamphus*, as I have not, as yet, looked up the point in the species therein contained. Possibly, too, *Totanus ochropus* may possess a sternum with but a pair of notches in it, and if that be the case, I am of the opinion that the character is very likely to be associated with other distinguishing points in the economy of these two birds, of ample importance, I think, to guarantee us in restoring for their reception, the genus *Rhyacophilus*, which change I propose in the present connection. Such forms as *Totanus flavipes* and *T. melanoleucus* have the usual *four-notched* sternum, as is the general rule among Limicoline birds.

To furnish certain comparative notes on this point, we find that Sir Richard Owen, in speaking of the sternum as it is found in certain birds of this order, says, in the second volume of his 'Comparative Anatomy and Physiology of Vertebrates,' on page 26, that "the woodcock (*Scolopax*) has a pair of notches, with the outer boundary slender, and shorter than the broad intermediate tract, the gambets (*Totanus*), avocets,

sandpipers (*Tringa*), curlews (*Numenius*), pratincoles (*Glareola*), have the four-notched sternum. In the godwits (*Limosa*, *Helias*) the medial notches are almost obsolete, and the lateral ones wide. The 'thick-knees' (*Œdicnemus*) and bustards (*Otis*) have the four-notched sternum, the notches being small."

A number of years ago I published in the 'Journal of Anatomy' in London, with plates, a memoir having much to do with the osteology of our American Limicolæ, wherein I was enabled to confirm Professor Owen's observations, and extend them by noting the 'four-notched sternum' in our own species of *Limosa*, in two species of Oyster-catcher, in *Totanus flavipes*, in several species of true Sandpipers, and in the genus *Bartramia*, where I found "a small pair of inner notches in the sternum, with very deep outer ones." I further went on to remark, as I have already stated above, that I had only found the 'two-notched' sternum in the Snipe (*Gallinago delicata*) of the American Limicolæ that I examined on that occasion. Since then, as I say, I have found a similar form of the bone in our own Woodcock (*Philohela minor*). Among taxonomists, the notching of the sternum has always carried with it more or less weight in deciding avian affinities, and I was promptly held up for my sins, for having published somewhere about a year ago, that I did not attach much weight to this character, as applied to the sterna of certain Auks, where the bone in the *same species* could be found to have a pair of notches, or a notch only on one side, or an absolutely notchless sternum. As we come among the higher groups of birds, however, this character becomes, as it were, more fixed, and the bone for any number of individuals of the same species, very much alike, and certainly the "notching" the same. So constant is the character that, for instance, I doubt very much that any one yet has discovered a sternum from a specimen of *G. delicata* with more than a pair of notches in it, while on the other hand no one can with certainty predict what the pattern of the xiphoidal margin of the sternum will be in a specimen of *Uria lomvia* before cutting down upon it for examination. Professor Owen figured the sternum of the now-supposed extinct Great Auk (*P. impennis*) with the posterior border *entire* to the bone in question. Whereas in specimens recently obtained by Mr. F. A. Lucas, the sterna show a pair of notches in many instances.

Osteologically, the gap between such genera as *Gallinago* and *Philohela*, and the genus *Tringa*, for instance, is a wide one, for not only is the sternum "two-notched" in the first mentioned genera, and "four-notched" in *Tringa*, but the remaining bones of the skeletons of the compared forms are also totally different, and thus bear out the dissimilarity of structure suggested by the sterna. Presumably, too, were the 'soft parts' also carefully compared, they likewise would support these differences. Having arrived, however, at the genus *Tringa*, and passing up through the order Limicolæ, as we group our birds in the A. O. U. Check List, we find the "four-notched" sternum a very constant character through it, and through the succeeding genera of *Ereunetes*, *Calidris*, *Limosa*, and, as I say, in such forms of *Totanus* as *T. melanoleucus* and

flavipes, until we come to the really notable departure in this particular as found in the sternum of the Sandpiper which is the subject of this letter.*

If you will kindly grant me a few more lines of your valuable space, I would like to add here a few supplemental notes in reference to the pterylography of the genus *Sphyrapicus*. It will be remembered that in the April (1888) issue of 'The Auk,' I figured this character for a Woodpecker of that genus, and showed how the 'saddle-tract' resembled that pteryla in most Passeres. This was perfectly true for all the examples then at my command, but since then considerable more material has come under my observation, and in some individuals of *Sphyrapicus v. nuchalis*, I find the pattern of the dorsal tracts in their pterylography, quite Picine in character, while several individuals prettily show intermediate steps approaching the pattern of the specimen I figured in my former letter on this point, alluded to above. In a letter of mine published in 'The Auk' in July, 1887, I showed how widely different in form the skulls of two birds of the same species might be, and I am now inclined to think that similar departures may occasionally be met with, where the pterylography may vary within certain limits for the same species. This would appear to be the case anyway in the Woodpecker about which I have been speaking.

Very respectfully yours,

R. W. Shufeldt.

Fort Wingate, New Mexico,
March 27, 1888.

NOTES AND NEWS.

Henry James Stovin Pryer, a corresponding member of the American Ornithologists' Union, died in Yokohama, Japan, where he has resided for many years, on February 17, 1888, from bronchial pneumonia. He was born in London, near Finsbury Square, June 10, 1850, the youngest son of Thomas Pryer, a London solicitor. He went to China in 1871, but shortly after he settled in Japan, where he engaged in mercantile business, devoting all his spare time to collecting natural history objects and to studying the butterflies and birds of that country.

* Since writing the above, I have received a valued communication from Mr. J. A. Allen, who has kindly looked into this matter for me, and reports that he finds the "two-notched" sternum in *Totanus ochropus*. I further learn that the sternum of this species is figured in Mr. Seebohm's recent work on the 'Charadriidæ,' but note with surprise that he makes so light of such an admirable generic character. This convinces me more than ever, that the genus *Rhyacophilus* should be restored.—R. W. S.

To ornithologists he is best known as Capt. Blakiston's collaborator in the various annotated lists of Japanese birds published in 'The Ibis' and the 'Transactions' of the Asiatic Society of Japan between the years 1878 and 1882, Mr. Pryer chiefly contributing the notes and the material relating to the birds of the Middle Island, while Capt. Blakiston furnished the data from the North Island. These publications mark a great advance in Japanese ornithology, and justly serve as the basis for all future investigations.

In the prosecution of his ornithological and other researches, Mr. Pryer visited the Bonin and Liu Kiu Islands, bringing home from the latter several new and highly interesting species which have been described by Mr. Seebohm. During a visit to Northeast Borneo he explored the famous caves of Gomanton, where he procured specimens of the edible birds'-nests and of the Swiftlets themselves (*Collocalia fuciphaga*), and in a most interesting paper, published in the P. Z. S., 1884, pp. 532-538, * related his experiences there, and explained the mode of construction and composition of these nests (see also below).

At one time he gave up business for an appointment under the Japanese government, and superintended the arrangement of the zoölogical collection in the museum of the Education Department. While in that service he travelled about in the southern part of the country attended by native assistants collecting for that institution. He soon returned to mercantile business again, and to private collecting and study; but he was always ready to afford assistance and advice to his former employers, and the success which attended the National Museum, as well as the one he had been instrumental in setting on foot in the zoölogical way, is no doubt much due to his aid.

A friend, to whom we owe much of the information embodied in the above sketch of Mr. Pryer's career, describes him as being of a wiry nature, capable of withstanding fatigue and excessive heat, though not robust, and as to his other qualities our correspondent quotes the following from the 'Japan Daily Mail' of February 20: — "Mr. Pryer had earned no small distinction as a naturalist. Earnest and unassuming, he cultivated knowledge for its own sake, and in the comparative retirement which he courted for the better pursuit of his work, he never lost the geniality and gentle kindness so often found in loving students of nature."

In recognition of his meritorious work as a zoölogist in Japan, Mr. Pryer was elected a member of the Entomological Society of London in 1867, a corresponding member of the Zoölogical Society, London, in 1878, and of the American Ornithologists' Union in 1883.

Mr. Pryer's name will always be honorably associated with the history of Japanese ornithology, and his death is a great loss to those who were specially engaged in that branch and who had the good fortune to profit by his correspondence.—L. S.

Another corresponding member of the A. O. U. has recently passed away, viz. Dr. Modest N. Bogdanow, who on March 4-16, died in St.

* A short abstract is to be found in the 'Standard Natural History,' IV, p. 438.

Petersburg only forty-seven years old. He was a Professor Ordinarius of Zoölogy at the Imperial University in St. Petersburg, and a curator of the Zoölogical museum of the Imperial Academy of Sciences in that city.

From 1867 he has been a very prolific writer, and gained for himself an enviable reputation as a bright and painstaking ornithologist. His careful methods, scientific accuracy, and keen power of distinguishing cannot be too highly eulogized in these days of slipshod ornithology, and his influence in these respects upon the younger school of Russian ornithologists is evident on every hand. Unfortunately most of his papers were written in Russian, and are hence inaccessible to most students outside of the great Eastern Empire, but his last work,* destined to be the crowning work of his life, was published in both Russian and French. Of this, however, up to his death only the first part has been published, but it is to be hoped that enough material may be found among his papers to insure the completion of this invaluable synopsis of the avifauna of more than one half the circumboreal region. Of his many other works we will only mention his 'Birds of the Caucasus,' and his admirable memoir on the Russian Shrikes.

Bogdanow was a trinominalist and a 'splitter,' which with his conscientious and thorough research make his writings particularly useful. The data furnished by him can in most cases be utilized directly, and with him for a guide over unfamiliar ground one feels comparatively safe. Where one's material and specimens give out, Bogdanow's statements are usually of such a nature as to help one out of the difficulty. How fortunate, if we could say the same of most that is written and printed about birds nowadays!—L. S.

While the wearing of dead birds, or portions of hem, for decorative purposes has immensely declined in this country during the last two years, and consequently the destruction of our native birds for such purposes, the barbaric trade in these decorations has by no means come to an end, as witness the following statistics of an auction sale held in London, March 21, of the present year. In a "Public Sale" list of Hale & Son, of Mincing Lane, London, handed us by a friend, we find advertised for sale on the above-named date, birds' skins, plumes, wings, and feathers, representing in the aggregate more birds than are contained in all the ornithological collections of this country, including private collections as well as public museums—in other words, *hundreds of thousands*, in this single auction sale! Besides about 16,000 *packages* and *bundles* of 'Osprey,' Peacock, Argus and other Pheasants, Ducks, "Paddy," and Heron feathers, we note several thousand *mats* and *hand-screens*, while under the head of "various bird skins," we figure up between 7,000 and 8,000 Parrots, shipped mainly from Bombay and Calcutta, but including some from South America; about 1000 Impeyan and 500 Argus Pheasants; about 1000 Woodpeckers; 1450 "Penguins" (Auks and Grebes?); some 14,000 Quails, Grouse and Partridges; about 4000 Snipes and Plovers; about 7000 Starlings, Jays, and

* Conspectus Avium Imperii Rossici.

Magpies; over 12,000 Hummingbirds; about 5000 Tanagers; 6000 Blue Creepers and 1500 other Creepers (probably family Cœrebidæ); several hundred *each* of Hawks, Owls, Gulls, Terns, Ducks, Ibises, Finches, Orioles, Larks, Toucans, Birds of Paradise, etc.; several thousand each of Wrens, Manakins, Bee-eaters, Kingfishers, Doves and Pigeons; "1493 Swallows," in one lot; and about 12,000 are scheduled under "Black Heads," "Black and White," "Pink and Black," "Grey and Black," "Various," etc. The number distinctly scheduled as *skins* reached nearly or quite 100,000, while the number represented by the 16,000 or more "packages," and "bundles," and the 3500 mats and hand-screens must amount to at least as many more.

As such sales are not of unfrequent occurrence, and doubtless occur in other large cities as well as in London, the wonder is that the supply continues. The traffic, if much longer sustained, cannot fail to have a marked effect in depopulating the countries supplying these sales of their bird life. What a bloody Moloch is fashion! and how thoughtlessly otherwise intelligent and tender-hearted women obey her behests!

Since the above was written, the following has appeared in a recent number of the 'American Field,' which forms a fitting addendum to the foregoing: "Last year the trade in birds for women's hats was so enormous that a single London dealer admitted that he had sold 2,000,000 of small birds of every kind and color. At one auction in one week there were sold 6000 birds of paradise, 5000 Impeyan Pheasants, 400,000 Hummingbirds, and other birds from North and South America, and 360,000 feathered skins from India."

We have been permitted to copy the following from a recent letter of the late H. Pryer, which may be of interest to the readers of 'The Auk':

"I think I sent you my paper on the Borneo Edible Birds'-nests? All the ornithologists and chemists have been down on me for saying that it is composed of a peculiar sort of *Alga* which grows in damp places in the caves at 300 to 400 feet elevation above the sea, but I have just received news that I am perfectly right and every one else for the past seventy years is wrong! They said the nest was made of the bird's own saliva, but Divers, who has analyzed the nest and algæ, finds in the latter a very peculiar gum, and that the nest is formed of this gum, mixed with the saliva of the bird. Divers was one of the strongest of my opponents, but now he finds I am right. I must say, however, that in the face of the weighty evidence brought against me I began to doubt the evidence of my own senses, although I was perfectly certain that a little pair of birds not bigger than the top joint of my thumb could not secrete several quarts of saliva three times a year to build their nest with."

Mr. C. B. Cory is still continuing his ornithological explorations in the West Indies, he having recently sent Mr. E. B. Gallenger to the Grand Bahama, while Mr. Clark P. Streator, formerly of California, has been engaged for an extensive collecting tour in the hitherto neglected portions of the Antilles. Mr. C. J. Maynard has just returned from an

extended exploration, in Mr. Cory's interest, of Nassau, Andros, Inagua, and the Caymans, collecting large series of the birds of these islands, among which are some novelties.

A MEETING of the several Audubon Monument Committees of New York and vicinity was held at Columbia College, May 22, at which reports of progress were made. The work of collecting funds for the proposed monument is thus far not meeting with quite the success hoped, although there is as yet little reason for discouragement. Those who intend to contribute should not hold back, but promptly send their remittances either to the general treasurer, Dr. N. L. Britton, Columbia College, New York City, or to the treasurers of the several sub-committees, as they may prefer. The treasurer of the A. O. U. Committee, Mr. William Dutcher (51 Liberty Street, New York City), reports the following contributions received (up to June 11) since the publication of the statement made in the April number of 'The Auk': Chapter No. 382, Agassiz Ass'n, by H. S. Fullerton, Sec., $2.00; L. S. Foster, 1.00; C. K. Averill, Jr., 2.00; Cash, Phila., Pa., 5.00; F. C. Browne, 2.00; L. B. Adams, 2.00; B. F. Gault, 5.00; Miss A. S. Van Cortlandt, 2.00; F. Bond, 1.00; N. S. Goss, 5.00; J. H. Sage, 10.00; "Colorado Springs," 5.00; R. Deane, 5.00; W. F. Hendrickson, 1.00; A. H. Hawley, 1.00; Prof. Alfredo Dugès, 5.00; W. C. Avery, M. D., 5.00; "Percy," 5.00; W. H. Foote, 5.00; Adolf Bachofen von Echt, 10.00; Dr. R. Blasius, 8.00; José C. Zeledon, 10.00; Anastasio Alfaro, 10.00. Total, $107.00.